

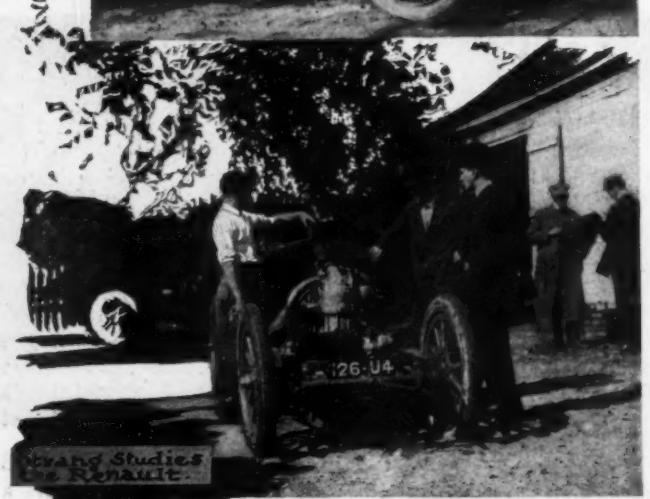
# THE AUTOMOBILE



**S**AVANNAH, GA., Nov. 19.—All is practically in readiness for the American edition of the Grand Prix of France, wherein will participate 14 cars of foreign manufacture and six of American make. The event is not unlike two races in one, for even the most enthusiastic American surcharged with patriotism does not hope for success against the six Italians, five Frenchmen, and three Germans, piloted by such experienced speed kings as Nazarro, Szisz, Hemery, Wagner, Fournier, Duray, and others scarcely less adept and daring. While it is true that the fat prize list has been a factor in securing such a notable array of foreigners, there also exists a desire on the part of France to avenge the German victory of July last at Dieppe and the Italian success of 1907. The tire companies, too, have an interest in the proceedings, and Michelin of France, Continental of Germany, and Dunlop of England are sharing a goodly part of the burden of this Grand Prix on American soil. So many elements enter into success or failure in an automobile road race that the best of form pickers can only guess as to the probable outcome. A wide range of opinion exists as to the winner. One man will fancy Hemery, the 1905 Vanderbilt winner, another Wagner, who scored in the 1906

big American race. But both of these drivers are now at the wheels of other cars, while their American successes were of the Darracq label. Strang, an American, with a foreign mount, is well liked because of his comparatively recent wins with an Italian-built racer. This time he figures as a Renault driver, one of his comrades being Szisz, the Grand Prix of France winner in 1906. Nazarro, with an uninterrupted series of victories in 1907, is of a quiet confidence-inspiring disposition. He will certainly bear watching. Fournier, the well-known Mors star of earlier days, is of the Italian contingent, with Cagno and Piacenza the other helmsmen of Italas. Hanriot and Erle, of the Benz team, and Rigal and Hautvast, the Clement pair, are not well known in this country. Duray, of the French aggregation, was born in San Francisco years ago, and ranks as one of the probable quantities. The second division of the race—which means the struggle of the American cars—will supply an interesting competition, especially involving the six-cylinder Chadwick and the four-cylinder Lozier, with the National and Acme "sixes" and the Simplex and Buick completing the American contenders. The small car race on the day before Thanksgiving will serve as a curtain raiser for the high speed





event. Seventeen little fellows, internationally divided, should supply some lively competition well worth the watching. It will be a source of regret that Herbert Lytle, one of the best of American drivers, will not be able to engage, as he is suffering from an attack of typhoid fever at his home in Toledo. Therefore, another one will have to be named for the Isotta car.

#### Concluding Arrangements for the Race.

Assignments to the replenishing and repair pits in front of the grandstand was made according to the results of the drawing for starting. The rules are such that all supplies, except tires, must be taken on from the pits in front of grandstand. Tires may be taken from one other station at the opposite end of the course. No one will be allowed to assist in repairs, adjustments, or replacements except the driver and mechanician of the car. This is the order of the start:

#### GRAND PRIZE RACE.

Place.	Car.	Driver.
1.	Clement .....	Regal
2.	Lozier .....	Milchener
3.	Simplex .....	Seymour
4.	Buick .....	Burman
5.	Chadwick .....	Haupt
6.	Fiat .....	Nazarro
7.	Acme .....	Zengle
8.	Benzo .....	Hemery
9.	De Dietrich .....	Duray
10.	Renault .....	Szisz
11.	National .....	Harding
12.	Itala .....	Cagno
13.	Clement .....	Hautvast
14.	Fiat .....	Wagner
15.	Benz .....	Hanriot
16.	Renault .....	Strang
17.	Itala .....	Fournier
18.	Fiat .....	De Palma
19.	Benz .....	Erle
20.	Itala .....	Placenza

#### SMALL CAR RACE.

Place.	Car.	Driver.
1.	S. P. O. ....	Juhasz
2.	Lancia .....	Hilliard
3.	Chalmers .....	Bergdoll
4.	American-Aristocrat .....	Manville
5.	Cameron .....	Cameron
6.	Isotta .....	Robertson
7.	Gregoire .....	Burman
8.	Buick .....	.... See
9.	Maxwell .....	Lorimer
10.	Chalmers .....	Hearne
11.	Buick .....	Costello
12.	Maxwell .....	Burns
13.	Chalmers .....	Easter
14.	Buick .....	Munwiler
15.	Maxwell .....	Kelsey
17.	Maxwell .....	

International signals are used on the course. Speed practice began Monday. One hundred and seventy-two flagmen, in addition to the special officers, guarded the course from 12 o'clock noon until 4 in the afternoon.

The light cars were on the ten-mile course from 12 to 1:30, and the Grand Prize racers had the course from 2 to 4 o'clock. In the light car practice Burman in a Buick skidded on the turn from the White Bluff road into the Montgomery crossroad and his machine went into a tree, smashing the right rear wheel and the running gear. It is doubted if the car can be gotten in shape for November 25. The company fortunately has an extra car in Savannah, which will be substituted for the damaged one. Burman was not thrown from the car by the impact with the tree, but received a severe shaking up. Grennan, who rides with him, was thrown thirty feet from the car, but escaped with a few scratches. Hilliard in the Lancia missed a turn going at high speed and went into a crowd watching the practice. His car was not injured, and no one was hurt, though there were narrow escapes. The light cars did not attempt any fast work on their first tryouts, but the Grand Prize racers made up for this when they took the course half an hour after the little fellows had left it. Duray in the De Dietrich on his first lap went the 25.13 miles in 22 minutes and 12 seconds, better than 69 miles an hour. Wagner was next best, with 23:20 and 23:50. Duray made another lap in 24:55. Nazzaro made a lap in 25:32. Rigal made laps in 23:36 and 27:51. Hanriot made 24:10 and 24:59. Szisz did a lap in 24:24 and another in 25:05. Hemery had laps in 24:58 and 25:04. Hautvast made a lap in 26:59.

The times in the first trials under racing conditions cause the experts to believe that the winner of the race will have to cover the 400 miles at the average rate of about 70 miles an hour to win. In the sprints on some of the longer stretches it is estimated that cars have gone faster than 100 miles an hour.

#### List of Officials Chosen.

The list of officials chosen for the Grand Prize race is imposing, not only in number, but in titular importance. At the top of the club's announcement of its choice stands the list of honorary referees. It is headed by the Hon. Hoke Smith, Governor of Georgia; the Hon. Joseph M. Brown, the Governor-elect, and Hon. George W. Tiedeman, Mayor of Savannah. Then come the names of the following gentlemen prominent in official list of the two promoting clubs with Jefferson de Mont Thompson, chairman of the A. A. A. Racing Board, added: Frank C. Battley, president Savannah Automobile Club; Harvey Granger, chairman course committee; R. J. Davant, chairman executive committee; E. H. Gary, president, Henry Sanderson, vice-president, Automobile Club of America.

An equally imposing array of judges of the State and local courts is named to act as honorary judges.

The real work of conducting the race will, however, fall upon Robert Lee Morrell, as referee; Fred J. Wagner, as starter; S. M. Butler, chief of timers; Harry T. Clinton, clerk of the course, and Tom Moore, press agent, assisted by W. J. Donlan, of the Savannah Chamber of Commerce. Harlan W. Whipple, A. R. Pardington and seventeen others are to serve as judges.

Ten have been appointed inspectors whose duty it will be to look out for possible fouling at the turns.

Major William B. Stephens will command the military. The following have been ordered to guard the course: Savannah Volunteer Guards, Georgia Hussars, German Volunteers, Irish Jasper Greens, Chatham Artillery, Oglethorpe Light Infantry, Emmet Rifles, Republican Blues and Savannah Cadets.

#### Attendance from North Will Be Substantial.

The attendance of a large crowd from New York seems assured from the reports of the steamship company and the various railroads and individual promoters of hotel trains and also of a throng of considerable proportions from several other Northern cities, special excursions being in progress of organization in Chicago, Boston and Cleveland. The Cleveland train load is being gathered by the local club.

On the *City of Savannah*, which has been chartered by the A. C. A., and sails Saturday, will go Judge Gary, its president, and other officials of the club. The overflow of sea-going racegoers that day will be carried by the *City of Columbus*, another ship of the Savannah Line. The boats sailing Tuesday and today carried considerable contingents of early invaders.

Big bookings are said to have been made on the Wall street special and the hotels to be run by the Pennsylvania and Baltimore & Ohio roads.

#### Cash Prizes Now Total \$17,850.

In addition to the \$8,000 in cash offered by the A. C. A. to the successful drivers, various equipment concerns have put up prizes, which amount to a large sum in the aggregate.

The Michelin Tire Company's prize list is a liberal one. It offers \$2,000 to the winner, \$1,000 to second, \$500 to third, \$300 to fourth and \$200 to fifth in the Grand Prize race; and \$500 to first, \$300 to second and \$200 to third in the light-car contest, an aggregate of \$5,000 for the two races.

Big money is also being put up by the Continental people, who offer \$2,000 to first, \$1,250 to second and \$750 to third in the Grand Prize; and \$250 to first, \$150 to second and \$100 for third in the light-car race.

The Bosch Magneto Company is also out with an offer of cash prizes made up of \$500 to first, \$250 to second and \$100 for third.

The total of these trade offerings is \$9,850. The bestowal of the prizes is, of course, conditional upon the equipment of the respective donors being used on the successful cars.



Photoed in a Savannah Setting



The Men Behind the Game



"Wynberry," One of Savannah's Relational Homes



Daily Scene about the Grand Stand

### FOURNIER GLAD TO VISIT AMERICA.

In the real pioneer days of automobiling in this country there was no more prominent and popular figure than Henry Fournier, the famous French cyclist, who naturally became a motorcyclist, and as naturally drifted into automobiling.

On Fournier's first American visit he brought with him a motor bicycle and a motor tricycle, and his startling performances on the 10-lap track in Madison Square Garden excited enthusiasm galore, for nothing like it had ever been seen before on this side.



Fournier of France.

His next visit came after he had won the Paris-Bordeaux and the Paris-Berlin automobile races. After incidentally tackling a "wild-cat" engine at a blind railroad crossing on Long Island, in which the car was smashed to smithereens and several of its occupants sojourned for a time in a neighboring hospital, Fournier, who had miraculously escaped unscathed and had saved his own life and that of his fellow passengers by some quick manipulation of the steering wheel, took the honors in the first straightaway races ever held in America. His Coney Island boulevard mile of :51 4-5 remained unbroken until Charles Schmidt, who served as his mechanician in the Paris-Berlin, accomplished a mile at Ormond-Daytona in :46 2-5 with the *Packard Gray Wolf*.

Fournier is at the head of the Paris-Automobile, one of the largest garages in Paris, and his business duties prevented him from competition for several years, his reappearance coming in the last Grand Prix at Dieppe. His Itala is a powerful car, though it may be somewhat at a disadvantage on the sinuous course at Savannah.

"I am truly glad to visit America again," said the well-known Frenchman upon his arrival Tuesday on the *Kronprinssessin Cecilie*. "I would not care to predict as to my possible success at Savannah, though I hope to quickly become familiar with the course, and shall do my best to figure among the early finishers."

"While the demand in France for big cars has not been as great as before, the monster tourer has received considerable impetus from Michelin's latest innovation in the shape of *les roues jumelles*—a double rim and two tires of a slightly smaller size, instead of a single large tire—a device which greatly increases the life of the tires and does away with a great deal

of tire trouble. Yes, oh yes, they were many, very many," he said, with regard to the number of American tourists *en automobile* to be seen in France during the past Summer. "More than ever, in spite of your hard times."

"The field for a good American car on the Continent is excellent," was M. Fournier's opinion on this subject, but he could not say whether he would take one back with him.

Another automobile celebrity to arrive by the North German liner is the Chevalier Garibaldi Colteletti, who comes as a delegate of the Automobile Club of Italy to look after the interests of the Italian entrants in the races at Savannah. When asked regarding the status of the Italian industry, he said it was only in a good way where the best known cars were concerned. "But with the exception of such small cars as had achieved a good reputation, or were very prominently before the public, such as the Lancia and one or two others, none of the newer entrants in the field had been able to survive the bad spell."

### STRICKER KILLED IN SOUTHERN RACE.

BIRMINGHAM, ALA., Nov. 17.—During the 24-hour automobile record race on the one-mile fair grounds track, which was poorly lighted, Emile Stricker crashed into the fence and was killed instantly. Barrows, the mechanic, was seriously though not fatally injured. Stricker will be remembered as having been the driver of Robert Graves's Mercedes in the Vanderbilt race, and in the preliminary practice had a narrow escape.

Louis Strang, who was driving the alternate car in the record contest, wired Tuesday from Birmingham as follows:

"Stricker was driving the Renault car with me for a twenty-four-hour record. The car skidded completely around while traveling on the turn, and did not burst a tire, nor did the car hit the fence. The only explanation of the accident is that Stricker's long coat caught in the rear wheel, pulling him out of the car. The heavy coat was torn from his body and was taken from the rear wheel after the mishap. The car was found to be in running order and the tires intact after the accident."

### FACTS ABOUT THE NATIONAL SIX

The National six-cylinder will enter the race as one of the three American "sixes" to compete for the Grand Prize. There are no foreign sixes entered for the competition. This car has cylinders 5 inches bore and stroke, respectively, and the motor will have the distinction of being the only product in which both the cams and the crankshaft will run on ball bearings. This motor is the same as that used in the National car known as the "Big Six," and the makers thereof put forth the claim that the car complete is a regular stock product, using identical materials with the stock car.



National Six-cylinder Candidate for the Grand Prize at Savannah, to Be Driven by Hugh Harding.

## STATISTICS OF FIRST RACE FOR GRAND PRIZE OF AMERICA, SAVANNAH, GA., NOVEMBER 26, 1908.

CARS	Driver	H.P.	Cyl.	Bore	Stroke	Cooling	Ignition	Clutch	Trans-mission	Drive	Track	Wheel base	Wheels	Tires and Rims
BENZ.....	Hanriot.....	120	4	6.1	6.3	Centrif. Pump, Honeycomb	H. T. Bosch	Leather Cone	Selective 4 Speeds	Chain	52 in.	108 in.	880 x 120 880 x 120	Michelin, Dem'nt'ble
BENZ.....	Hemery.....	120	4	6.1	6.3	Centrif. pump, Honeycomb	H. T. Bosch	Leather Cone	Selective, 4 Speeds	Chain	52 in.	108 in.	880 x 120 880 x 120	Michelin, Dem'nt'ble
BENZ.....	Erle.....	120	4	6.1	6.3	Centrif. Pump, Honeycomb	H. T. Bosch	Leather Cone	Selective, 4 Speeds	Chain	52 in.	108 in.	880 x 120 880 x 120	Michelin, Dem'nt'ble
BAYARD-CLEM'T.	Rigal.....	120	4	6.1	6.3	Centrif. Pump, Honeycomb	H. T. Bosch	Multiple Disc	Selective, 4 Speeds	Shaft	50 in.	107 in.	870 x 90 880 x 120	Dunlaps, Dem'nt'ble
BAYARD-CLEM'T.	Hautvast.....	120	4	6.1	7.3	Centrif. Pump, Honeycomb	H. T. Bosch	Multiple Disc	Selective, 4 Speeds	Shaft	50 in.	107 in.	870 x 90 880 x 120	Dunlaps, Dem'nt'ble
DE DIETRICH....	Duray.....	125	4	6.1	6.3	Centrifugal Pump	H. T. Bosch	Multiple Disc	Selective, 4 Speeds	Chain	52 in.	107 in.	870 x 105 880 x 120	Dunlaps, Dem'nt'ble
FIAT.....	Wagner.....	120	4	6.1	6.3	Centrifugal Honeycomb	H. T. Bosch	Multiple Disc	Selective, 4 Speeds	Chain	50 in.	107 in.	870 x 105 880 x 120	Michelin, Dem'nt'ble
FIAT.....	Nazzaro.....	120	4	6.1	6.3	Centrifugal Honeycomb	H. P. Bosch	Multiple Disc	Selective, 4 Speeds	Chain	50 in.	107 in.	870 x 105 880 x 120	Michelin, Dem'nt'ble
FIAT.....	DePalma.....	120	4	6.1	6.3	Centrifugal Honeycomb	H. T. Bosch	Multiple Disc	Selective, 4 Speeds	Chain	50 in.	107 in.	870 x 105 880 x 120	Michelin, Dem'nt'ble
ITALA.....	Piacenza.....	110	4	6.1	6.3	Centrif. Pump, Honeycomb	H. T. Bosch	Multiple Disc	Selective, 4 Speeds	Shaft	54 in.	118 in.	875 x 105 895 x 135	Michelin, Dem'nt'ble
ITALA.....	Cagno.....	110	4	6.1	6.3	Centrif. Pump, Honeycomb	H. T. Bosch	Multiple Disc	Selective, 4 Speeds	Shaft	54 in.	118 in.	875 x 105 895 x 135	Michelin, Dem'nt'ble
ITALA.....	Fournier.....	110	4	6.1	6.3	Centrif. Pump, Honeycomb	H. T. Bosch	Multiple Disc	Selective, 4 Speeds	Shaft	54 in.	118 in.	875 x 105 895 x 135	Michelin, Dem'nt'ble
RENAULT.....	Strang.....	115	4	.....	6.2	Thermo-Syphon	H. T. Bosch	Leather Cone	Progressive 3 Speeds	Shaft	50 in.	105 in.	875 x 90 875 x 120	Continental Dem'nt'ble
RENAULT.....	Szisz.....	115	4	.....	6.2	Thermo-Syphon	H. T. Bosch	Leather Cone	Progressive 3 Speeds	Shaft	50 in.	105 in.	875 x 90 875 x 120	Continental Dem'nt'ble
ACME.....	Zengle.....	60	6	4.99	5.0	Centrifugal Pump	Jump Spark, Bat, and Mag.	Cork Insert	Selective, 4 Speeds	Chain	56 in.	108 in.	.....	Michelin, Dem'nt'ble
BUICK.....	Burman.....	50	4	5.0	5.0	.....	Jump Spark Remy	Cone	Selective, 3 Speeds	Shaft	.....	108 in.	34 x 4 34 x 4	Continental Dem'nt'ble
CHADWICK.....	Haupt.....	50	6	5.0	5.0	.....	Jump Spark	.....	.....	Chain	56 in.	112 in.	36 x 4 36 x 4	Michelin, Dem'nt'ble
LOZIER.....	Michener.....	50	4	5.75	5.25	Centrifugal Pump	H. T. Bosch	Multiple Disc	Selective, 4 Speeds	Shaft	56 in.	124 in.	34 x 4.5 34 x 5	Continental Dem'nt'ble
NATIONAL.....	Harding.....	60	6	5.0	5.0	Centrifugal Pump	H. T. Bosch	Cone	Selective, 3 Speeds	Shaft	56 in.	116 in.	34 x 4 34 x 5	Michelin, Dem'nt'ble
SIMPLEX.....	Seymour.....	50	4	6.1	5.75	Centrif. Pump, Honeycomb	H. T. Bosch	Multiple Disc	Selective, 4 Speeds	Chain	56 in.	126 in.	910 x 110 920 x 120	Continental Dem'nt'ble

## STATISTICS OF PARTICIPANTS IN LIGHT CAR RACE AT SAVANNAH, GA., WEDNESDAY, NOV. 25, 1908.

CARS	Driver	H.P.	Cyl.	Bore	Stroke	Ignition	Clutch	Trans-mission	Drive	Track	Wheel base	Size Front—Rear	Tires
AM. ARISTOCRAT.....	Manville.....	25	3*	3 2/3	3 1/2	.....	.....	.....	.....	.....	.....	.....	.....
BUICK.....	Jeffers.....	18	4	3 3/4	3 3/4	H. T. Remy	Cone	Planetary, 2 Speeds	Shaft	56 in.	88 in.	30 x 3 1/2 F. & R.	Michelin, New Demountable
BUICK.....	Easter.....	18	4	3 3/4	3 3/4	H. T. Remy	Cone	Planetary, 2 Speeds	Shaft	56 in.	88 in.	30 x 3 1/2 F. & R.	Michelin, New Demountable
BUICK.....	Burman.....	18	4	3 3/4	3 3/4	H. T. Remy	Cone	Planetary, 2 Speeds	Shaft	56 in.	88 in.	30 x 3 1/2 F. & R.	Michelin, New Demountable
BUICK.....	Hearne.....	18	4	3 3/4	3 3/4	H. T. Remy	Cone	Planetary, 2 Speeds	Shaft	56 in.	88 in.	30 x 3 1/2 F. & R.	Michelin, New Demountable
CAMERON.....	Cameron.....	18	4	3 3/4	4	.....	Cone	Selective, 3 Speeds	Shaft	56 in.	98 in.	32 x 3 1/2 F. & R.	.....
CHALMERS.....	Bergdoll.....	30	4	3 3/4	4 1/2	H. T. Bosch	Multiple Disc	Selective, 3 Speeds	Shaft	56 in.	110 in.	32 x 3 1/2 F. & R.	Michelin, New Demountable
CHALMERS.....	Lorimer.....	30	4	3 3/4	4 1/2	H. T. Bosch	Multiple Disc	Selective, 3 Speeds	Shaft	56 in.	110 in.	32 x 3 1/2 F. & R.	Michelin, New Demountable
CHALMERS.....	Burns.....	30	4	3 3/4	4 1/2	H. T. Bosch	Multiple Disc	Selective, 3 Speeds	Shaft	56 in.	110 in.	32 x 3 1/2 F. & R.	Michelin, New Demountable
MAXWELL.....	See.....	14	2	4 1/2	4	L.T. Splitdorf	Multiple Disc	Planetary, 2 Speeds	Shaft	56 in.	84 in.	30 x 3 1/2 F. & R.	Ajax-Grieb
MAXWELL.....	Costello.....	14	2	4 1/2	4	L.T. Splitdorf	Multiple Disc	Planetary, 2 Speeds	Shaft	56 in.	84 in.	30 x 3 1/2 F. & R.	Ajax-Grieb
MAXWELL.....	Munweiler.....	20	2	5	5	L.T. Splitdorf	Multiple Disc	Progressive 3 Speeds	Shaft	56 in.	96 in.	32 x 4 F. & R.	Ajax-Grieb
MAXWELL.....	Kelsey.....	20	2	5	5	L.T. Splitdorf	Multiple Disc	Progressive 3 Speeds	Shaft	56 in.	96 in.	32 x 4 F. & R.	Ajax-Grieb
GREGOIRE.....	Robertson.....	16	4	3 1/5	5 1/10	H. T. Bosch	Cone	Selective, 3 Speeds	Shaft	52 in.	95 in.	810 x 90 min. F. & R.	Michelin, New Demountable
ISOTTA.....	Lytle.....	10	4	2 2/5	3 9/10	H. T. Bosch	Multiple Disc	Selective, 3 Speeds	Shaft	49 in.	82 in.	710 x 90 mm. F. & R.	Michelin, New Demountable
LANCIA.....	Hilliard.....	12-18	4	3 1/2	4	H. T. Bosch	Multiple Disc	Selective, 4 Speeds	Shaft	52 in.	105 in.	810 x 100mm. F. & R.	Continental, Demountable
S. P. O.....	Juhasz.....	18-24	4	3 3/4	5 1/10	H. T. Bosch	Leather Cone	Selective, 3 Speeds	Shaft	.....	110 in.	32 x 4	Continental, Demountable

\*Two cycle.



Typical Picturesque Setting of a French Hill Climb, This Scene Being Located at Gillion.

NOW that the racing rules for another year have been settled by the International Association of Recognized Automobile Clubs, as was lately reported in these columns, European designers will at once start work on their new racers, and, judging from the latest reports and rumors, quite a few newcomers in the field are to be expected. In order to give the American public and makers an insight of the question which the distance has always made rather remote, even to those most interested, consideration will be given in the following to the influence which the new rules will have on the design and construction of the 1909 racing cars, together with an occasional reference to European methods of race preparation.

As was before stated, a large number of entries is expected in next year's big road races. On the other hand, it is doubtful, although the question was brought up, whether a longer course than usual will be selected, at least for the French race, so that there is every chance of a crowded race in which there will be a large amount of passing, necessitating cars of quick accelerating power, and this will be one of the most important points to be considered and one which will materially affect the design.

#### Effect of Reduced Engine Size.

It is not to be expected that the reduction in engine size included in the rules will bring about a closer resemblance between the racing and the touring cars. In fact, the effect will altogether be different, and an *eclosion* of high specialized machines, which the unaverted mind certainly would term as freakish, is to be witnessed. A forecast of what will happen can easily be drawn from the history of the English Four-Inch race, which was expected to be a touring car event and turned out to be the competition so far held in which the most unconventional machines were presented.

The influence of the minimum weight limit will be small, as, considering the type and size of the mechanisms which will be used, there is very little reason to believe that any maker will produce a car below 900 kilos; at the same time it will be well to keep as close to this limit as other conditions, especially adherence, will permit. It might not be untimely to state as regards this special question that foreign makers have pretty nearly abandoned the old notion that weight within reasonable limits was a hindrance to speed. In fact, not a few French makers openly admit that their unsuccesses in late years have been largely due to excessive power in proportion to weight. Inspection of past results will evidence the fact that the success-

ful cars of the past two years were all on the rather heavy side, while the preceding successes of Brasier and Renault had been victories of relatively low-powered cars.

#### Strokes of Ten Inches May Be Seen.

Next year will be a long stroke year, as was 1908, or rather more than was this year. Strokes of ten inches will probably be seen; these, however, present constructional difficulties which will probably prevent their general adoption. The writer favors 200 millimeters or approximately eight inches. This will make an already quite high engine, although not sufficiently so to bring any noticeable perturbations in the stability of the machine in negotiating curves, such as were evident in the Voiturette Grand Prize, where the torque reaction of the very high single-cylinder engines created considerable driving difficulties around corners. It was found that engines with crankshafts turning left handedly were easier to manage in the numerous left-hand turns. Considering the fact that most races are run counterclockwise, with a predominance of left-hand turns, this sense of rotation should be recommended for racing engines.

To draw full advantage of the long stroke, and to give the engine the necessary flexibility on the crowded course, piston speeds much above normal will have to be resorted to, and the most successful motors certainly will keep up to 2,500 to 2,800 revolutions per minute without any appreciable drop in the power curve, which conservative estimates place above 130-horsepower.

To attain these results the greatest care will have to be exercised in the laying out of the valves and piping, and in the timing of the motor, with consideration to the laws of gas flow and inertia. The valves in a hemispherical cylinder head, which were a majority this year, will next year be the rule, and they will preferably be set at 45 degrees angle, as in the Clement 1908 racer. The writer favors flat-seated valves in such an engine as having a better seat at high speeds and requiring considerably less lift for a given port area. The lift, however, should be sufficient to allow for more than the strictly necessary opening, as flat valves create more wire-drawing effect on gases than do cone-seated ones.

In the design of the valve proper the fillet should be very large, so as to guide the gas to the edge without the creation of eddy-currents, and the portion of the valve head bearing on the seat should not be left to protrude at a higher level than the head proper, as is done in ordinary flat-valve practice to facilitate grinding, as this sets up a resistance to gas flow at the very

point where it is most harmful. The valves themselves should be very light, as well as the reciprocating parts in their actuating mechanism to avoid inertia effects and insure strict obedience to cam profile. The inlet valve should be at least a full three inches diameter. The exhaust valve, if single, should be at least equal, although the above considerations of shape are of less importance for its design, but the writer would favor a smaller valve or an equal one with less lift and a well-designed valve closed exhaust port at bottom of stroke.

The exhaust valve should preferably seat direct on the cylinder head without the use of a cage to insure a cool and undistorted seat, which would otherwise be feared considering the diameter. This would increase complication and reduce accessibility, but the chances of a machine are so utterly spoilt by a valve breakage that it cannot well be raised as an objection.

If a caged-in construction has to be resorted to, the writer will recommend that used on the motor which Nazarro drove with the well-known success at Brooklands. In this high rotary speed motor a single inlet and two exhausts were provided, all overhead. A fork-shaped rocker arm actuated the exhaust pair from a single actuating rod. This construction permitted to use exhaust valves of relatively small diameter, reducing the risk of pitting and of seat warping to reasonable limits, as was proved by the results achieved in the race, which was one of the hardest tests an engine ever was put to.

#### Regarding the Actuating Mechanism.

As regards the actuating mechanism, the overhead camshaft is most tempting, but it tends to further increase the height of an already abnormal engine, so that it seems preferable to leave this part in its more usual location in the crankcase. For the rocker arm construction the writer would favor the single beam, long ago inaugurated on the Fiat racers and used on the Stoddard-Dayton stock cars, flat-leaf springs being used in preference to coil for valve return action.

The cam design should be such as to permit of rather wide clearance between rocker arm and valve stem, giving more sudden opening of valve. In the designing of the moving parts considerable care should be taken to so dispose the centers of gravity and of inertia of the beams, rods and fitments that a minimum effort be necessary to their motion at the highest speeds, and the necessary return springs should be fitted besides the valve springs proper to insure constant contact between the valve rods and the cams.

#### Timing Is Most Essential.

One of the main points in the successful design of such a high-speed engine is that of timing. Let it first be accepted that the recommended timing will be altogether different from that which would be adopted in an engine where anything like fuel efficiency was looked for. We simply want the maximum power at practically any cost.

Exhaust valve lead will be increased over current practice, 65 degrees before lower dead center not being exaggerated, although a suitable and large exhaust port in bottom of cylinder would permit advantageously to reduce this figure. If ports are well designed, lag of exhaust closing would not need be more than 10 to 15 degrees, this depending largely upon the length of the exhaust piping and its effect on the momentum of the outgoing charge. The lag at inlet opening should not exceed 20 degrees in order to give the cylinder the maximum of time to fill itself. The suitability of an overlapping action of the exhaust and inlet valves can only be decided upon when the piping is laid out. It works at its best with a long exhaust pipe and a short inlet, and the auxiliary exhaust port is unfavorable to it. The lag in closing the inlet also largely depends upon the piping design and the carburetor resistance to gas flow, but it should, in the writer's opinion, be around 15 to 20 degrees.

These conditions of timing and of speed are of considerable influence on compression, but it seems to the writer that considering past experience and the special requirements of the engine as to speed and flexibility, a safe compromise could be

struck between 90 and 100 pounds cold. A compression relief through sliding camshaft would be useful for starting, but the writer will insist upon the undesirability of special exhaust cams for the use of engine as a brake, as was made on a few European racing cars. Such cams are highly desirable on touring cars, but in a racing car their use brings such perturbations in the carburetor functions as to greatly reduce the rapidity with which the car picks up speed after their operation, making them more detrimental to high average speeds on a difficult course than would be occasional misuse of the mechanical brakes.

Hints as to carburetor design are too special a proposition to be insisted upon here. It should, however, be mentioned that the throttle should be as close to the inlet valves as possible. In fact, the most successful French designer of racing cars always made his racing engines with twin cylinders and had a separate throttle for each pair located within the casting directly under the valves, and this he considers of vital importance.

#### Castor Oil Lubrication Will Grow.

Lubrication will best be by the simple combination of splash with an overflow and a return pump to upper part of crankcase. Castor oil lubrication, inaugurated this year, will certainly generalize next season as favoring the enormous piston speeds aimed at. The cost of it is such that it will only be used in the very last days of practice and on the race days. Provision should, however, be made for it at the start through specially tight piston rings and of all means which will avoid its invasion of the combustion chamber, as it is of a most searching nature and is prone to leave more carbon deposits than the majority of other oils.

A successful departure from standard ignition practice which was used on some of the best cars of this year's races was the low-tension magnetic make and break, and it certainly will be more generally used next year. It will probably be used together with a well synchronized system of simultaneous ignition at two distant points in the cylinder head. This was used in the most remarkable engines of the small car race, where the unfavorable before-the-race theoretical comment which the move suggested was completely upset by results consisting in the obtention of 25 horsepower at 2,750 revolutions per minute out of a single 4-inch bore cylinder.

Although the writer favors a single casting for the four cylinders, in a moderate size engine he will suggest for the special case under consideration that the cylinders be cast separate with a skeleton water jacket around the head, and be finished inside and out with a common water jacket applied on the complete assembled unit, thus making a three-bearing crankshaft possible without undue span between the bearings and leading to a more compact and evenly cooled engine. To allow easy and rapid variations in speed, the crankshaft and the fly wheel should be light, especially the latter, whose influence is great in slowing down and restarting for passing and negotiating curves, which we have mentioned as an important point for coming races.

The crankshaft will be mounted on three large ball-bearings. To make high piston speeds possible, the reciprocating parts will have to be of the maximum lightness. Although pressed steel pistons have attained quite a preeminence abroad, they are not

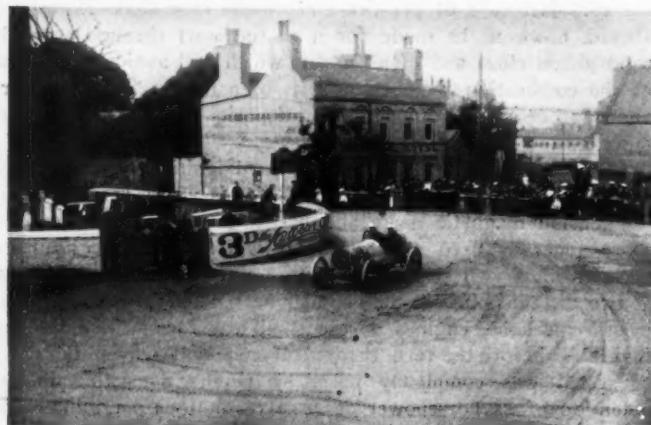


Two Famous French Makers,  
MM. Renault and Brasier.

likely to be universally used, and the writer's personal experience is that, with a mild close-grained material, a cast-iron piston finished inside and out can be made fully as light as any steel construction, and present incomparable advantages as regards ease of running and security against seizing together with less abundant and easier lubrication. The connecting rod will be at least four times the crank throw, and preferably be cut from the solid in a roughly shaped hand forged alloy steel billet. The recommended section will be tubular, and very little material left at the ends, which simply will have to hold the bushings, the latter being relied upon to provide the necessary stiffness to distribute the load on the journals. The piston end bushing will preferably be cast iron of the same grade as selected for the piston itself, and will not require to be very thick; the big end will preferably be of the full marine type and soft babbitt lined.

Not much need be said concerning the crankcase except that weight is gained and strength increased in these very high engines by carrying it quite high up the cylinder barrels, whose lower end is thus made very thin and acts merely as a liner to guide the piston.

A multiple disk or a Hele-Shaw clutch will answer the purpose very well, especially considering the fact that too large



Passing Through Town During British Four-Inch Race.

flywheels, even quite light, are not favorable to very high engine speeds, and, although steadier, are not desirable in the machine considered. But the writer would, nevertheless, favor a cork insert cone clutch, even if a powerful spring is required as more certain in results and less affected by variations in lubrication. Locking pins should be provided, as in the Brasier cars, and a dashpot fitted to prevent reckless usage of this dangerous part, as will sometimes be made by a most careful driver.

#### Thinks Chain Drive Is Preferable.

The car will obviously be chain driven. The percentage of chain-driven cars has steadily been increasing in European races and live axle victories have made themselves scarce. In a race run under engine limitation rules there is no room left for loss of power, and on account of considerably lesser unsuspended weight the chain gives a much better utilization and considerably reduces driving wheel slip.

The gear box and differential will be in a compact casing close to the rear axle, to reduce chain length, and will be joined to the clutch through a shaft and two full universal joints. The jackshaft will also be universally jointed to accommodate frame torsions, and the chain brackets will be stiffly braced on the cross member to which the rear of the gear box will be suspended. Four speeds should be provided, with direct drive on third and fourth, and the first and second should drive to the differential causing without returning to the primary shaft.

Concerning brakes, a set of internal expanding in the rear wheels and two pedal actuated contractings on sleeves extended from the differential casing are long established and satisfactory.

In respect to the running gear, high front wheels with narrow tires are conducive to easy running, and the adoption of similar front and rear wheels has no advantage of value to offset the advantage in speed derived from the construction mentioned in the foregoing.

#### Preference for the Detachable Wheel.

Although no decision has yet been arrived at by the ruling bodies concerning the wheel question, it appears that preference ought to be given the detachable wheel, if authorized, provided that the design of the rear hubs and sprockets is such that the drive be taken up as close to the rim as possible without undue strain on the spokes.

In the design of the car, considerable attention will have to be given to wind resistance. In respect to this it should be noted that slanting hoods and centrally located radiators are not of necessity desirable shapes, although they may be means toward the end. In fact, one of the best studied cars in this respect in 1908 was the Mors, and it had its radiator in ordinary touring car location and shape. The radiator is a necessary evil as long as the rules will be such as to remove all chances for air-cooled cars, if they are to ever have any. A well-designed honeycomb or flat naked tube radiator can be made with very little wind resistance, and of relatively small size, if the engine is properly designed, so that it can be left at its usual excellent place and the thinking be done on other parts of the machine. In the Mors case, the parts under the hood were all treated as if directly exposed in order to give the easiest possible flow to the inrushing air. The slant of the foot boards was carried to the height of the hood, and a large sheet aluminum plate fitted underneath to gradually deflect the air toward the ground to the rear, at the same time protecting the mechanism of the rear half of the machine. Externally the hood was conntinued by a sheet metal apron of other than haphazard shape coming close to the driver, protecting the occupants, save for the driver's head, and thus annihilating the considerable windage which they often are the cause of; the protection of the hood and dashboard being lost at the distance the seats are from the latter. Considerable attention should also be paid to the rear shapes on which the air closes. This is a matter of elementary boat engineering, and yet Serpollet and Brasier probably were the first to think of it, and that after the building of many cars, which, although most carefully studied in their forward shapes, did not show advantage over common construction.

#### Advantages Possessed by the Europeans.

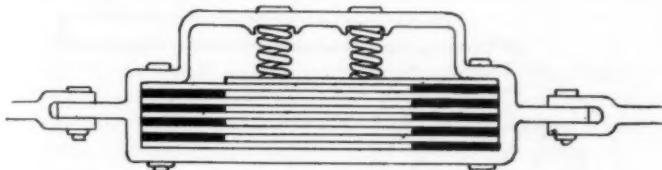
To close this study, a word will be said on what is claimed to be an advantage of the foreigner over the American, that of practicing. This does not exist to the extent believed on this side. The advantage of the foreign driver resides mostly in the experience the engineers, in the factory behind him, have of the racing problem, which is entirely different from that of making a good touring car, and also in the fact that the cars are generally ready months before the race. This, however, does not imply high speed practicing; the foreign driver tours with his car and gets sufficiently acquainted with it to feel "at home" behind the wheel. But the only real "test to destruction" takes place at the first race, and this explains the large quantity of mechanical troubles developing at the French race, which generally is the first of the season, in machines on which the drivers have had thousands of miles of so-called practicing without a hitch. It will be sufficient to mention the Fiat crank-shafts and the Michelin detachable rims in the last French race, or the Hotchkiss axles in a previous instance, as striking examples.

That the American will have his word against the best foreigner, when the question will be handled with the same thoroughness here as it is abroad, is undubitable. The day should be close at hand, considering the impulse which the Locomobile victory and the creation of special roads should give to the question, and it is hoped that the foregoing consideration of one side of the problem will be of some help toward the end.

## THE GENERAL UTILITY OF SHOCK ABSORBERS

By THOS. J. FAY, PRESIDENT SOCIETY OF AUTOMOBILE ENGINEERS.

WERE springs perfect, with never a spring failure, accessories, known as "shock absorbers," would scarcely have a footing in connection with the automobile. Shock absorbers were originally devised in connection with railroad trains, in conjunction with the couplers connecting the cars, to enable the locomotive driver to start one car at a time. It is hardly necessary to point out the long train of cars could not be started by the engine were the couplings rigid, thus requiring the simultaneous acceleration of the whole train of cars.



A Shock Absorber of the Laminated Plate Type.

Couplers with a simple loss motion were tried in the early days, and, of course, the loss motion enabled the locomotive driver to take advantage of the same, with a view to starting one car at a time. It was soon found, however, that the cars were unable to stand the shock, and the spring bumpers, so called, came into vogue as a result. The spring bumper served very well for a good many years, but it always possessed the disadvantage of engendering oscillations, since it is true that the energy stored in a spring will be given up again, less the amount represented by the inefficiency of the process. To obviate this difficulty, laminated friction plates were placed in conjunction with the springs in such a way as to permit the springs to act, but the energy stored in the springs as a result of that action was dissipated by the friction of the laminated plates. In this combination will be found the source of the so-called shock absorbed as used in automobiles, and, as a matter of fact, its widest application to-day is in connection with railroad trains used to dissipate the energy of the coupler springs to kill the longitudinal oscillations.

In connection with the automobile, to consider the use of so much weight in the shock absorber system as will be found in the shock absorbers of railway cars would be out of the question, and since the weight of the shock absorbers must be something to take into account, if they work, while if they fail to work it is a crime to supply the requisite quantity of material for the purpose. There are two ways of solving this problem, the one of which is to use enough material for a direct application as they do in connection with railroad cars, the other of which is to apply pressure to a nest of circular discs or laminated plates, so connected with the lever system and linkages as to multiply the effect of that pressure for the purpose. Certainly the principle of lever advantage can be used to a very good purpose, and the fine examples of shock absorbers take this into account.

### Friction Methods of Absorbing Shocks.

Shock absorbers of the friction type work both ways (as a rule), which means that the springs are snubbed both in action and in reaction. This is a matter that might be regarded as an advantage, excepting under certain conditions. As, for illustration, if a car in negotiating a series of depressions, happens to be of a wheelbase (considering the speed of travel) such as will set up a synchronizing periodicity, then it is plain that the friction type of shock absorber can prevent the springs from reacting within the period of time necessary to the process, with but one result, i.e., shock. This condition can be evaded by a chauffeur possessing enough skill to pilot an ox-cart, and it should be evaded, since, forsooth, one cannot tell what will happen to a car during the instant of spring failure.

There are shock absorbers of the class in which the dissipation of energy, by means of laminæ of plates or discs, does not take place. In this type of shock absorber springs or dash-pots are set to snub the reactive tendencies only. If springs, they may be of the helical type, working direct, or through a lever arm, and they may be simple or compound. A simple helical spring differs from a compound in that, in a simple spring the pull in pounds will be in direct proportion to the elongation or the compression, as the case may be; whereas, in a compound helical spring the pull in pounds increases disproportionately with the compression. The action of a spring so set is to limit the reaction of the spring suspension proper, the extent of which reaction in the absence of shock absorbers may be greater than the direct action of the springs, as is shown in the bumpometer record, Fig. 16. This reaction if not snubbed is probably the most potent factor for spring failures; the main leaves of the half elliptical springs in the absence of retainers are called upon to take the load under conditions of camber, indicating extreme fiber strains. The use of retainers modifies this individual action on the part of the main leaves, but the retainers do not serve as a cure for the evil, whereas the shock absorbers are specifically placed to limit the action, and if they are properly designed and suitably installed they will serve the purpose.

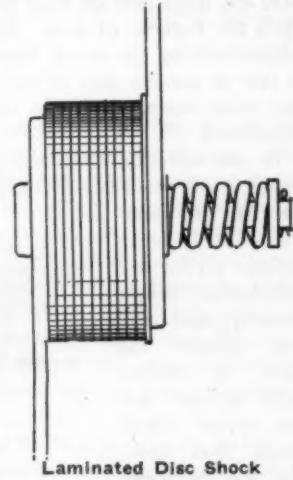
### The Spring Checking of Rebounds.

There are several examples of springs in which the shock absorber feature is confined; in other words, the more ingenious of the spring makers are endeavoring to so design the springs proper as to eliminate the need for shock absorbers. The "Perfection Spring," as made by the Perfection Spring Company, of Cleveland, Ohio, is an example of what can be done by way of affording springs capable of resisting adequately in reaction as well as in action. Another scheme for accomplishing more or less the same purpose is effected by simply reverting the full elliptical springs at their ends, instead of using hinges. Retainers serve to a considerable extent for the same purpose, because they bring the short leaves into play in reaction, whereas without the retainers the main leaves would have to do all the work.

In recent times the idea of the cushion pneumatic spring has been developed to a certain state of perfection, and this spring will work just as well in reaction as it can work under the direct load. It seems to be satisfactory in truck work where it has been tried out, and a little experience along this line may indicate further successes.

There is one other type of spring which is suitable for use in reaction, namely, the flat band coil (clock) spring. This product seems to be favorably considered by some autoists, and there is scarcely any reason why it should not do the work. Some experiments conducted in New Jersey last year, under the direction of Mr. J. M. Ellsworth, were with a view to ascertaining the extent to which shock absorbers would govern the action of springs and indicate the much desired level platform. The reaction involving a standard touring car of good characteristics as indicated on a bumpometer designed for the purpose, showed that the reaction from the normal static position was considerably more than the downward motion.

Some of the tests show that the reaction was 50 per cent. more



Laminated Disc Shock Absorber.

than normal downward motion from a static point, and repeated trials seemed to indicate that, with the shock absorbers, when properly adjusted, the reaction was kept within one-half of the normal downward motion, considering the normal static position at a base line. A common complaint made at that time was one

that had for its basis the lack of permanency of adjustment of the shock absorbers, they were capable of doing the work were they properly adjusted.

The makers of shock absorbers have evidently realized the arduousness of this service, because they have all redesigned along more rigid lines, and it is believed that this delicacy of adjustment is a condition of the past.

There is one other point having bearing on this phase of the question that should not be overlooked. If a car is so badly designed that the springs will not take care of the downward motion, it will be futile to expect the shock absorbers to take care of the reverse motion. Shock absorbers are not intended as supports for structurally weak springs or as cure-alls in cars of a high center of gravity, excess top hamper, short wheelbase and high speed. A spring maker will not be able to furnish springs to satisfy a condition such as this, and, as before stated, if the springs fail there is no chance whatever of the shock absorbers succeeding. These devices are auxiliary in their relation, and their success depends upon the success of the parts to which they relate.

Autoists are naturally curious to know which of the type of shock absorbers extant are the best suited to the occasions; they are prone to believe that there must be one best way.

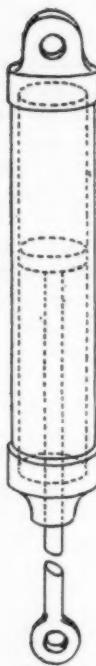
There never seems to be any one way that is better than a half-dozen others, unless all the conditions are previously fixed in view of that one way. The very fact that shock absorbers come as an afterthought would rather preclude the chance that they could have any fixed bearing upon the previous conditions as established upon the designs of cars. If cars are designed or constructed without taking the shock absorber question into account, then it is fair to assume that of the types of shock absorbers available that some one of them may be suitable to the occasion, all things considered.

In the selection of shock absorbers for cars that are constructed independently of them, it becomes necessary to consider the car performance. If the springs proper are sufficiently supple initially, and will not permit the body to contact with the axle under severe conditions, thus limiting the performance to be corrected to excessive rebound; in such a car the reactive members might be limited to a gradual snubbing action above the static level. On the other hand, if there is an excessive vertical bounce and a series of oscillations, the shock absorbers might well be of the drag class, snubbing the action of the springs above and below the static level.

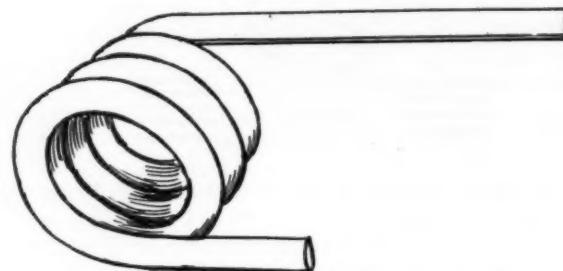
When cars are in the process of design, it is quite possible to eliminate the need of shock absorbers to the extent they are required in some examples of design. This is not to say that the shock absorbers could be eliminated, or that it would be desir-

able to eliminate them, any more than it would be a good idea to reduce automobiles to their simplest form. The fact that shock absorbers are used, and the further fact that they serve a useful purpose is no license to design cars so badly that even good shock absorbers would fail to can the oscillations.

**Plea for Better Materials.**—The success that has attended the shock absorber zone of activity is, despite the use of inferior materials in many cases and frightfully sloppy methods of applying the devices to cars. When the shock absorber interest more fully realized the terrific strains that shock absorbers fell heir to, they did move up, and they did correct more glaring faults with rather a good showing of promptness. On the whole, however, the material used in shock absorbers and the manner in which the materials were applied did not reach the high plane



Dashpot Idea.



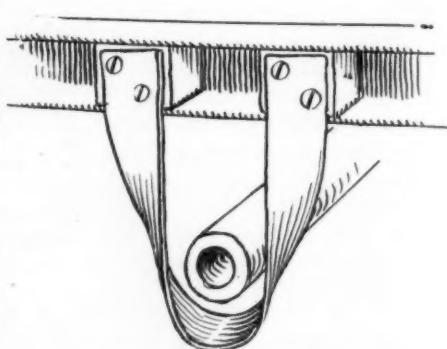
Simple Type of Spring Shock Absorber.

of automobile design for a long time. It was the lack of appreciation of the work shock absorbers had to do that retarded their progress to a marvelous extent, and it is because they have intrinsic value that they survived. There was a time when autoists preferred to wrap their springs with "Sampson" cord rather than be beguiled into fancied security by adopting shock absorbers that would not stay in place.

Fortunately, the situation developed a certain stability because of the underlying merit of the scheme, and the various types of shock absorbers are now to be had in much more stable form. It is not believed they have reached the limit of possible improvement, although they probably are on just as high a plane as any other branch of automobiling at the present time. There may be a little room for improvement by way of better spring materials, more permanent friction members and more secure blocking devices, but the latter part of this suggestion is open to the whole automobile, and not limited to shock absorbers.

**The Influence on Cost of Maintenance.**—If shock absorbers have the effect of leveling the platform and preventing oscillations, as well as rolling, it is equivalent to saying these same shock absorbers will materially reduce the cost of maintenance of the car. This is as plain as can be, because the life of a car on a hard level road is ever so much longer than the life of a car if the road inequalities are sufficient to engender shock conditions. It is the function of the shock absorbers to abort shock in that they snub the violent reactive tendencies that are due to the energy stored in the springs during the downward swing of the body. This energy stored in the springs must be dissipated by some device provided for the purpose, or it will be dissipated in the process of wearing out the elements of the car. Every violent motion imparted to the elements of the car construction is resisted at the terminals of the inter-relating members at the expense of high pressure, the inconsequence of which is that surface erosion must take place.

There is still another point of view involving the question of the kinetic ability of the materials used, as, for illustration, the dynamic life of any given material is much shortened if the material is subjected to violent shock loads. Distance rods, for instance, are stressed to double the static load, which in itself does not indicate the most serious factor, generally overlooked. In the first place the distance rods must be double weight, because the shock imparts double strain, but the life would be shortened even with twice as much material.



Scheme of Leather Limit Stop.

## WINTER TROUBLES WITH COOLING WATER

YEAR after year, as Winter comes on, the question of the freezing of the cooling water is discussed anew. It is a serious matter and a feature in automobiling that will ever have to be dealt with, unless perchance oil or some other medium will ultimately be found to displace water, in Summer and Winter alike. A perfectly satisfactory cooling medium would have properties as follows:

- (a) The specific heat would be that (or near) water;
- (b) The specific gravity would be that (or near) water;
- (c) The mobility would be nearly constant under all conditions of temperature;
- (d) The solution would not support electrolysis;
- (e) There would be no separating out of the components;
- (f) Precipitation would not take place at any temperature;
- (g) The boiling point would be that (or greater) of water;
- (h) The solution would be neutral as respects its reaction;
- (i) The rubber hose joints would not deteriorate in contact with the solution;

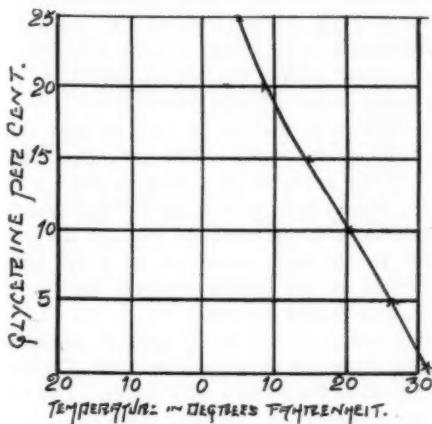


Fig. 1—Solutions of glycerine and water.

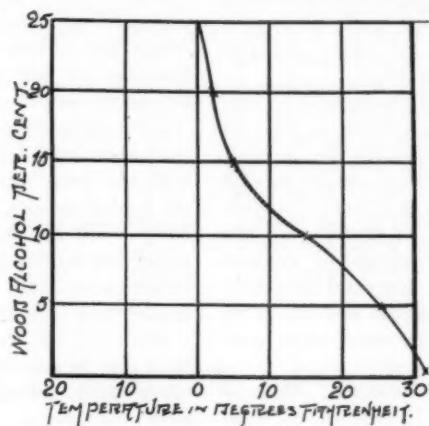


Fig. 2—Solutions of wood alcohol and water.

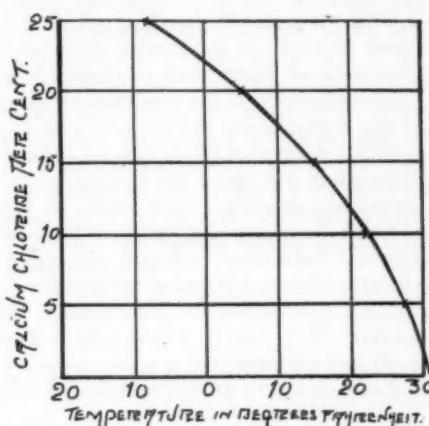


Fig. 3—Solutions of calcium chloride and water.

- (j) The metals would not deteriorate in contact with the solution;
- (k) Non-inflammable or nearly so.

Water answers all these requirements, excepting that its boiling point is a little lower than it ought to be for the best results. The best thermal efficiency of a motor will be when the jacket temperature is somewhat above the boiling point of water; there is not therefore quite sufficient margin, and the water is boiled off too easily.

Water is non-inflammable, and that is more than can be said for most oils. Light mineral oils, on the other hand, possess the high boiling point, so much to be desired, and the oil would therefore not waste away. Just how efficient this oil would be for the purpose is a matter that has not been settled conclusively, although some work has been done along this line and the author is using oil at the present time.

In the mean time it will be well to go over the whole matter the extent possible, in the light of present knowledge, rather with the hope of benefitting the many who come into the field with their first Winter's experience as yet in the embryo. Of the media at present used, there is alcohol, glycerine and solutions of calcium chloride. Water is used with all of them, and in general, it is proper to say, the more water used the better if the solution will not freeze.

**Solutions of Glycerine and Water.**—These solutions work very well indeed, although it is true that the glycerine does attack the rubber hose joints, but not so rapidly as to become over troublesome. The chart, Fig. 1, gives the freezing points for the several mixtures of glycerine and water, and, as will be noted, no

solution is considered above 25 per cent of glycerine (by weight), for the reason that, as before stated, the more nearly pure water is the solution the better, all things considered. It has been found that 25 per cent glycerine will serve in such weather as is experienced in New York. The author has used this solution and without any freezing trouble at all through three Winters. The solution will thicken up, but it will not solidify, and unless it does it will not disrupt the piping. The "slush" formation goes through a gear pump with apparent ease, and that is probably the most troublesome point in the circulation system.

If the system gets hot, it is water that boils off, and to replace the same is all that has to be done for, say, three months. After a time the solution loses all semblance of its original balance, and to start over again, with a new solution, is the wise course.

**Solutions of Wood Alcohol and Water.**—Wood alcohol differs from glycerine in one very essential particular in that it is the wood alcohol that boils off instead of the water. This is a misfortune, since wood alcohol answers every purpose in every

other way. True, there are impurities in some grades of wood alcohol that under certain circumstances can do damage. With the low percentages, used in cooling and at the temperatures that prevail, it is not believed there is any danger from the use of this product in cooling work.

Fig. 2 gives the freezing point of solutions of water and wood alcohol, in which the alcohol is referred to in per cent, by weight. The balance of the solution is pure water (hydrant), and it will be understood the mixture will have to be adjusted at frequent intervals. The wood alcohol will soften the rubber hose joints, rather slowly, so that it differs only in degrees from the glycerine in this respect.

**Wood Alcohol and Glycerine in Water.**—Since either one of the ingredients added to water will lower the freezing point, it is a fair inference that they combined will do the same thing, each in its proportion to the water present—allowing that there is no chemical combinations—they being merely intimate mechanical mixtures. Assuming that the wood alcohol is to be preferred on some counts as less liable to choke up the constricted passageways, then it is well to consider the advisability of reducing the quantity of glycerine and substituting alcohol instead. It is very likely that by the use of both wood alcohol and glycerine, the total quantity of water can be increased, and this is a step in the right direction on two counts, i.e., (a) cost and (b) stability.

With 10 per cent of glycerine in the water, the freezing point is 20 Fahrenheit. This leaves 90 parts of water, to which add alcohol, in amount equal to the glycerine added, plus excess alcohol solution to make up for water in the same—say, 10 per cent—and the effect of the alcohol present will be to lower the

temperature  $13\frac{1}{2}$  degrees Fahrenheit. The result will be a mixture, with a freezing point slightly below zero, with improvements in other ways besides. This solution then would consist of 10 per cent glycerine and 11 per cent of wood alcohol, in which 10 per cent water will be found. The balance to be water.

This solution would still serve fairly if through lack of attention all the alcohol were to escape. The glycerine, then, would be as a safety medium and might be of great advantage on that account. On the other hand, to be rid of over half the usual amount of glycerine used is a positive advantage.

**Solutions of Calcium Chloride and Water.**—Of this material and its uses but little has been said, excepting that it should be chemically pure. Its performance in the cooling system of automobile motors has not been commented upon at any great length, and experience is wanted. Even if it is chemically pure, this is not to say there will be absolutely no electrolytic action. To what extent these salts will precipitate is a matter that should receive some consideration. The average "thermo-syphon" system is ripe for precipitation of the salts of metals suspended in water. The reason for this lies in the fact that the precipitation takes place at certain temperatures below the boiling point of water, and it is the thermo-syphon system that affords strata of water at several levels of temperature. In the thermo-syphon system the water is steaming where it contacts with the hottest zones around the combustion chamber, and the rather sluggish movement of water tends to support precipitation.

The efficiency of the phenomenon called emissivity will be low, if the surfaces are coated with a crust of any kind, as salts of metals. Sodium chloride has not been proposed for the purpose, although it will lower the freezing point of water almost as well as calcium chloride. As a matter of fact, 15 per cent of sodium chloride (common salt) gives a temperature of freezing of  $12.2$  degrees Fahrenheit, whereas the same percentage of calcium chloride affords a freezing temperature of 15 degrees Fahrenheit. Beyond this degree of concentration the calcium has the most marked effect, but it is positively a hazard to use a more concentrated solution.

Common salt is cheap; that is one thing in its favor. Electrolytic action would follow its use, but this is true of all such (metallic) salts. It would not be possible to eliminate the action by using chemically pure salts, for in battery work the salts are chemically pure, the object being to eliminate other than desired electrolytic phenomena.

Radiators are costly, delicate and composite in construction—that is to say, there are a plurality of metals in the makeup of radiators, hence electrolytic action would follow, due to the difference of potential natural to different metals immersed in a saline bath. Fig. 3 shows the freezing point of calcium chloride, of the several degrees of concentration up to a saturated solution. It must be remembered that the saturated solution is ascertained at 60 degrees Fahrenheit, and increasing the temperature increases the capacity of the water to hold in suspension the salts. Any approach to the saturation limit then is attended by danger of precipitation. On the other hand, the Ohmic resistance of solution is lowest at about half saturation. In the long run it is experience that counts, and it is still a question as to the extent to which saline solutions can be used with safety. No autoist cares to do the experimenting if his radiator is to be the "dog to try it on." There is no other point against saline solutions, especially common salt. Cast iron undergoes a change in its structure when it is immersed in salt water. The castings seem to rot. The rot is to a great depth and is different from oxidation. Sea water has the same effect, and in sea water the salts are diverse, including sodium and calcium.

From what has been said there would seem to be no solution so good as water, but unfortunately water will expand when it freezes, and it will freeze, on small provocation in a radiator. The efficiency of this device is a guarantee that the necessary heat exchange will take place, with a small difference in temperature below 32 degrees Fahrenheit.

**Oil as a Cooling Medium.**—Of this liquid for purposes of

cooling there are points in its favor that renders it even more efficient than water. In the first instance, oil has a higher boiling point—about double—than water, and as a result the oil will not waste away.

The heat exchange takes place at a higher temperature, and the thermal efficiency of the motor will therefore be higher. The cooling system can be with less surface, hence lighter, and the work of the fan is of less importance. As a general proposition, oil will absorb heat in the ratio of 10 to 7, as compared with water, and too with half the drop in temperature, which is at a saving of cooler surface. On the other hand, the oil works at a higher heat level, which is the secret of the better heat exchange for a given radiator surface.

Of course, very soft solder for the joints of radiators might melt out were oil used, should the heat balance take place at a fairly high level of the temperature. Solder can be so soft as to melt in boiling water. True, no radiator should be held together by solder with a low fusing temperature for, aside from the above consideration, the strength of the joint will be lower for the solder of the low fusing point.

In a given radiator the temperature of the heat balance depends (a) upon the efficiency of the radiating surface, and (b) upon the extent of that surface. Radiators differ as much as 100 per cent, as respects efficiency of the surface, and in cases in which water boils off alarmingly it is always a good possibility that the oil will work without giving trouble of any sort, if indeed the power of the motor is not actually increased.

Air cooled motors are efficient in the use of fuel, because the heat abstracted through the cylinder walls is low, in comparison with the heat "sponged" off the surfaces by cooling water. The air cooled motors, on the other hand, have unequal temperature zones. Oil cooling stands as a happy medium in that the inequalities are leveled, and the adjacent zones are of a common temperature—(a) lower than in air cooled motors, (b) at a higher heat level than in water cooled motors.

With oil, the circulating pump should be of greater capacity than it is in some examples of pumps to be seen on cars. On the other hand, "leakage" with oil is lower than with water. The oil packs the pumps. One more point: The oil kills pump noise and profusely lubricates the pump, and, again, should there be a small jacket leak to the cylinder, it would not be of such great consequence, although a leak of any moment would cause excess pressure and "spouting" in the cooling system.

**The Quality of Oil to Use.**—This is a matter that can only be put in abstract terms. Oil is subject to a great variety of substitutions, and reliance must be placed in the refiners. Any refiner who will study the conditions and fairly meet them will be justly rewarded. The oil should have properties as follows:

- (a) A constant mobility under the several conditions of temperature;
- (b) The minimum body;
- (c) The highest possible specific heat;
- (d) The highest possible boiling point;
- (e) The highest possible flash point;
- (f) No acid reaction whatsoever;
- (g) Fair lubricating properties;
- (h) A stable chemical state of equilibrium, under the conditions of service.
- (i) Absence of rosin or gum of any sort;
- (j) Free from jelly formation;
- (k) Low priced.

Of the oils to be had it would seem as if a light, thin, pure mineral oil would be the most reliable, in most, if not all respects. Animal fats become rancid under certain conditions and acid in time. Vegetable oils are prone to the same tendencies. Fish oil would be worth trying, merely as an experiment.

In any case the "overflow" pipe from the cooler should not lead to a point adjacent to lamps, or any other source of flame, for, should the oil reach its boiling point, the vapor would ignite readily and this is something to avoid. To be sure, oil is now used extensively in automobiles, and it does not add to the fire

hazard perceptibly when compared with gasoline which is handled with great safety. At all events, it will be well to stick to water rather than to take all the brands of oil that can be had upon paying the price. The "oil man" has oil to burn, but the man with an automobile can scarcely afford to add fuel to the flame.

**Some Basic Considerations.**—A little further light on the question will tend to put oil before the mind's eye as a good future possibility. It was said oil will permit of the heat balance at a higher level than that possible with water. Taking this as a basis, it is to show that, for a given "wetted" surface of cooler, the heat exchange will increase because of the difference in temperature as follows:

$$W = \frac{1}{223} F t A = \text{Emissively in watts.}$$

$W$  = emissively in watts;

$F$  = increase in temperature in degrees Fahrenheit;

$t$  = number of water cycles per minute;

$A$  = area of wetted surface in square inches.

If it is assumed that the loss to the cooler must equal about 50 per cent of the value of the fuel, while the useful work equals 16 per cent, then for a 16-horsepower motor the loss to jackets will be 50 horsepower. With water for cooling, the value of

$F = 100$  degrees in round numbers, taking a hot summer's day for it and assuming that the temperature should remain stable at about 200 degrees Fahrenheit.

Transposing the formula, we have:

$$A = \frac{223W}{F t} = \frac{223 \times 37,300}{100 \times 60} = 1393.7$$

$$W = 50 \times 746 = 37,300.$$

$t$  = number of times heat is sponged off by water, per minute: say 60.

The area of a cooler with oil, if the temperature of exchange

would be 200 degrees above the surrounding instead of 100, as with water, would be:

$$A = \frac{223W}{F t} = \frac{223 \times 37,300}{200 \times 60} = 693.1$$

In other words one-half the surface, if double the temperature, is taken. These relations are independent of the efficiency of the surface; any surface that would do for water, and perform in a fitting manner, would be reduced one-half were the working difference in temperature doubled.

There is a common notion that motors have to work at low temperatures. This notion is fitted to the wrong detail. It is the water that has to be kept from boiling. The limit, excluding water, is preignition. The weight efficiency of a motor will fall off if the heat is beyond a certain point, but this same efficiency is not as high, with water, as it would be with some cooling medium that would not abstract so much of the fuel value from the cylinder walls. As a matter of fact, there is a fallacy in the formula due to this influence, but, in the absence of data, it is better to abandon the fallacy, since the error is on the safe side.

If preignition sets in it is a sign of excess compression, low speed, or light flywheel. These matters can be corrected. If oil will equalize the temperature adequately, and accomplish the task at a higher thermal level, provided the weight efficiency will approach the maximum in the process, the adoption of oil will be as one of the distinct advances in automobile work. In the meantime the inexperienced autoist will be wise to look as high as the universal joint in his neck will allow, provided he keeps his feet on the ground. A man that cannot afford to ruin an automobile will do well to let oil experiments come down the line, to be adopted by the makers of automobiles first, or to be worked out by auto enthusiasts who can afford to take the risk. There are many pitfalls to be encountered, mainly because oil (the name) covers a multitude of sins.

## THE ABSTRACT ABILITY OF KEYS FOR SHAFTS

LET,

$D$  = diameter of a shaft in inches;

$B$  = breadth of key in inches;

$L$  = length of key in inches;

$T$  = twisting moment in inch-pounds;

$S_1$  = working stress of shaft in pounds;

$S_2$  = working stress of key in pounds per square inch.

Then,

$$T = \frac{\pi D^3 S_1}{16}$$

**EXAMPLE:**

$$D = 1.25; B = .25; L = 2;$$

$$S_1 = 16,000; S_2 = 16,000.$$

Then,

$$T = \frac{3.1416 \times 1.95 \times 16,000}{16} = 6130$$

If the key is from the axis a distance equal to

$$Y = \frac{D}{2} \quad \text{Then } T = B L S_2 Y.$$

That the strength of the key should equal that of the shaft is assured, hence:

$$\frac{\pi D^3 S_1}{16} = \frac{B L S_2 D}{2}$$

and,

$$\pi D^3 S_1 = 8 B L S_2.$$

Therefore:

$$L = \frac{\pi D^3 S_1}{8 B S_2}$$

Exploiting the example further we have:

$$T = B L S_2 Y = .25 \times 2 \times 16,000 \times \frac{1.25}{2} = 5000.$$

Thus showing that the shaft is stronger than the key in the ratio of 6,130 to 5,000. This would not indicate harmony.

It was said:

$$L = \frac{\pi D^3 S_1}{8 B S_2} = \frac{3.1416 \times 1.25^3 \times 16,000}{8 \times .25 \times 16,000} = 2.419.$$

Thus, we find the key should be nearly 2.5 inches long, to be equal in strength to the shaft, but, should it be impossible to lengthen the key, as in a gear case, for instance, in which no more than 2 inches can be allowed, then the remedy lies in a compromise, if a reduction in the value of  $T$  can be considered. The compromise would come by way of increasing the breadth of the key.

If a compromise is not permissible, the diameter of the shaft must be increased enough to swell the value of  $T$  adequately.

If the key and the shaft are not of equally good materials, the values taken for  $S_1$  and  $S_2$  must reflect the difference. If the hub that is keyed on is of different material, again, an allowance must be accordingly made.

If two keys are fitted (usually at 90 deg.), it is best to assume that only one of them will have to do the entire work; it is not easily possible in practice to fit two keys alike. The key that fits the best must do all the work, until it deforms enough to allow the other key to go to work. If the "scab" (second) key is not a fair fit there is no safety in having it there. Anyway, the shaft is weakened and harmony cannot reside in a two-key job.

In automobile work, hubs are invariably so short as to require close figuring when keys are considered. It is not uncommon to find lost motion in timing gears, due to short keys on small-diameter shafts. Even flywheels are with lost motion betimes, and when this is noticed it is high time to look for a repair shop.

## LETTERS INTERESTING AND INSTRUCTIVE

### HOW TO CALCULATE DIMENSIONS OF GEARS.

Editor THE AUTOMOBILE:

[1,638.]—I should appreciate very much if your correspondence department could give me information of any simple rule or formula which you have for figuring the size of cams and required diameter of timer gears and half timer gears; also commutators and timer gears for four-cylinder four-cycle motors. What horsepower should a motor of four-cylinders four-cycles  $1\frac{1}{4}$  by  $1\frac{1}{2}$  develop?

A SUBSCRIBER.

Berkeley, Cal.

There is no simple rule that you will be able to use to give you a constant gas velocity through the influence due to changing the contour of cams. Most internal combustion motors disregard the question of a constant gas velocity. The lift of the valves should be about 8 millimeters (25.4 millimeters equal one inch); having fixed upon the lifts of the valves, you have established the maximum eccentricity of the cams. You have not established the interval of time the valves should stay open. This phase of the question could not be discussed sufficiently in limited space, but fortunately THE AUTOMOBILE (issued Nov. 5, 1908, page 639) discussed this matter at great length.

How to calculate the dimensions of gears for the half-time shaft is very completely dealt with in the catalogues of the Brown & Sharp Co., Providence, R. I. It will be impossible to do the subject the same justice in the space here afforded. In relation to the power that you might expect from a four-cylinder motor,  $1\frac{1}{4}$  times  $1\frac{1}{2}$  inches, bore and stroke, respectively, it is only possible to give an arithmetical value which according to the A.L.A.M. would be as follows:

$$\text{H.P.} = \frac{1.25^2 \times 4}{2.5} = 2.5 \text{ nearly}$$

This is on the assumption that the piston speed will be 1,000 feet per minute. Since your stroke is  $1\frac{1}{2}$  inches the crankshaft speed for 1,000 feet per minute piston speed, would have to be 4,000 revolutions per minute; this is higher than anything any one has yet had the pleasure of witnessing. Should the crankshaft speed have to be lowered to, say, 3,000 revolutions per minute, the power would then be about three-fourths of that given in the formula, with a better chance of actually realizing the same because the gas velocity would be more nearly in accord with accomplished facts.

### SPLIT PORCELAIN TUBES IN SPARK PLUGS.

Editor THE AUTOMOBILE:

[1,639.]—I recently changed my spark coil on an old model car, substituting a modern high-priced coil instead. I expected to be out of all ignition troubles as a result, but find that the porcelain tubes on the spark plugs fail rather too frequently. Could you tell me why?

P. H. D.

New York.

The time was when this difficulty could be traced to inferior porcelain or to the means of "taking up." In other words, the porcelain tubes were pinched and cracked as consequences. On other occasions the defect was due to unequal expansion, and between the several causes, some one of which seemed to be present rather too frequently, autoists were ever wont to complain, and justly, since the tubes are fragile enough at best, without resorting to unequal pressure due to an ill fit. The main point, however, is to call attention to a new trouble due to the higher efficiency of spark coils as they may now be had. In the first place, the old sources of trouble are almost, if not quite, eliminated, and the new one will be avoided under proper conditions.

Modern spark coils will spark across a considerable gap, but as the gap increases, so does the strain on the porcelain tubes. This "electrostatic" strain will become enough to disrupt the tubes in some cases, if the electrodes are spread apart as much as they may be ere the spark dies out. Care should be exercised not to go the limit in this respect.

### SPELTER IS USED FOR BRAZING CAST IRON.

Editor THE AUTOMOBILE:

[1,640.]—Can you give me through "Letters Interesting and Instructive," the formula for the compound used in the brazing of cast iron.

A SUBSCRIBER.

Bostonia, Cal.

In the regular brazing process, which can be used to braze cast iron, "spelter" is employed.

### TWO AND THREE-PORT MOTORS.

Editor THE AUTOMOBILE:

[1,641.]—Please explain the principles and construction of the "three-port" motor.

G. P. AMES.

Brooklyn, N. Y.

In the two-port motor, as illustrated in Figure 1, the functions are as follows:

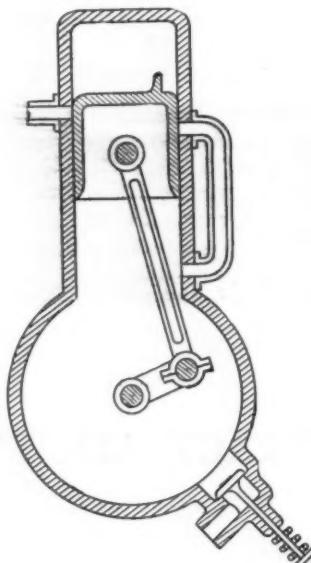


Fig. 1—Two-port motor.

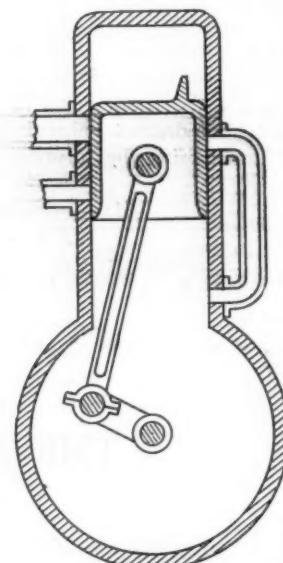


Fig. 2—Three-port motor.

The first stroke of the piston produces a vacuum in the crankcase and the mixture rushes in (as a consequence) through the check valve in the motor case. The second stroke compresses the mixture, and when the communicating port is uncovered the mixture surges into the cylinder. The next (third) stroke compresses the mixture entrapped in the cylinder, since the ports are then covered by the piston, and at the proper instant the mixture is ignited.

From this point on it is a normal repetition of functions, and once the motor gets under way it two cycles. The three-port example differs in that the mixture is taken in through a third port uncovered by the piston instead of through a check valve in the case, and the details in practice change accordingly. The drawings show the difference so clearly as to demand no further discussion.

### THE UTILITY OF THE OFFSET CRANKSHAFT.

Editor THE AUTOMOBILE:

[1,642.]—In talking to automobile salesmen the descriptions of their products more frequently than not include a reference to offset crankshaft. Can you briefly state the advantages derived?

M. B.

The practice of offsetting the crankshaft in automobile motors is rapidly gaining converts, and there are numerous examples of offsetting to be seen at the present time. In this scheme, it will be remembered, the crankshaft is not set in the plane of the middle of the cylinders. In other words, the crankshaft is

set slightly to one side. The exact amount of this offset seems to be a variable with different designers, but the object is always the same. When the piston is in the position of maximum compression involving the ignition and flame propagation, it is the idea to have the connecting rod in the vertical position. The force of the explosion will then come on the connecting rod endwise and the piston will not be pressed unduly against the cylinder walls.

#### THE TREND IN MODERN SPRING PRACTICES.

Editor THE AUTOMOBILE:

[1,643.]—I am curious to know why it is that spring troubles are so prevalent in some cars and entirely absent in others. It cannot be always a question of the quality of material, because I have seen spring breakages repeatedly with varying grades of materials on a given car. What are the other influences aside from the quality of material that should receive consideration? L. L. D.

New York.

The old practice of fixing a uniform curvature of the spring leaves frequently leads to breakages due to distortions set up at the spring perch. This tendency is now aborted by making the spring leaves in such a way that the curvature begins at points beyond the spring perch, so that the clamps when they are pulled into tight relation do not straighten out the plates. It is still the custom to use a leather pad on which to rest the springs because thereby the coefficient of friction becomes that of leather, and creeping tendencies are as a consequence remote. There is also the question of the camber given to the respective spring plates. If the plates are all of the same thickness, they should all be curved to the same radius, for then the extreme fiber strain would be equal in all the plates for every alteration in camber incidental to the service they are placed to perform.

#### MORE FOR THE MAN FROM DULUTH.

Editor THE AUTOMOBILE:

[1,644.]—In answer to query No. 1,601, will say that I believe the party will find the unaccountable knock, when ascending hills on the high speed, to be in his torsion rod, it having jarred loose and needs to be tightened. Have had the same trouble myself, and, after quite a lot of looking around, I located it. BOX 826.

Aurora, Mo.

Editor THE AUTOMOBILE:

[1,645.]—In letter No. 1,601, October 27 issue, I notice that a friend from Duluth is having trouble when pulling up grade on high gear. I think that he will find that his trouble is backfire caused by what is called static electricity. For a remedy, first separate all battery leads and ground by 1-inch space, fastening same with wood or some non-conducting fasteners; and if this does not remedy the trouble try interchanging the unit coils in the spark coil case. Sometimes the latter is all that is necessary.

In short, it sometimes happens that the leads or spark coils become "shorted" by this static or latent electricity and cause a

backfire when the mixture is just right. I hope that if our friend from Duluth has faith sufficient to try the remedy here suggested he will also report through your valuable columns what measure of success he has.

A MINNESOTA SUBSCRIBER.

Owatonna, Minn.

#### "HUMBLE CHAUFFEUR" ANSWERS "SOREHEAD."

Editor THE AUTOMOBILE:

[1,646.]—I am tempted to send this reply to the right honorable Mr. Sorehead, L. D. F., Auburn, N. Y.:

"Gracious Patron of Chauffeurs:

"Your delightful billet doux is just received, and I hasten to acknowledge the pleasure and inspiration it affords me. The gentlemanly expression of your amiable attitude loosens my hand from the wheel and lifts me out of the right front seat to lofty heights of serene beatitude. Hence

Where the motors cease from throbbing  
And employers are the best;  
Where the carburetors clog not,  
And the chauffeurs are at rest;  
Where the restless, reckless road-kings  
Are meek and reverent,  
And indulge not in expletives,  
Nor to their spleen give vent;  
Where there is no cushion greasing,  
And the lamps do never break,  
Where the License is legitimate  
Without a poker stake;  
Where the 'Chosen' really care for  
And operate the car,  
Politely waive their salary  
To spare Sorehead a jar;  
Where there are no paper collars,  
Where there is no 'Forty per,'  
Where the garage smells like roses,  
Mingled with sweet scented myrrh;  
Where the inner tube is cherished,  
And there is no 'soda-hop,'—  
All are college cultured chauffeurs  
And employers are tip-top,—  
The chosen all are linguists  
Of profound ability,  
They bow and scrape and palaver,  
With killing courtesy;  
Where owners have no 'hell-sticks'  
To grudge to 'firemen,'  
Where evil looking goblins  
Ne'er stupid seem again;  
Where the gasoline fraternity  
Ne'er bump into a dray,  
Nor wreck a nervous system  
Nor honk along the way.  
No prison stripes are prayed for  
By pious Sorehead jays  
Who pen-paint with a master hand  
The chauffeurs' beastly ways.

"But I am brought back to commonplace existence with a thud. I vociferously long to uplift the Employers' profession, but modestly hesitate to suggest possible ways and means of improvement in their morals and manners because I am your

"Sterling, Ill.

"HUMBLE CHAUFFEUR."

## THE AUTOMOBILE CALENDAR

### AMERICAN.

#### Shows and Meetings.

- Dec. 31-Jan. 7.—New York City, Grand Central Palace, Ninth Annual Automobile Show, conducted by the American Motor Car Manufacturers' Association, with Exhibits by the Importers' Automobile Salon, Inc., Alfred Reeves, General Manager, 29 West 42d St.
- Jan. 5.—New York City, Fourth Annual Meeting Society of Automobile Engineers. (Will adjourn until January 19 after opening session.)
- Jan. 16-23.—New York City, Madison Square Garden, Ninth Annual National Show of the Association of Licensed Automobile Manufacturers. M. L. Downs, Secretary, 7 West 42d St., New York City.
- Feb. 6-13.—Chicago Coliseum and First Regiment Armory, Eighth Annual National Exhibition, National Association of Automobile Manufacturers. S. A. Miles, Manager, 7 East 42d St., New York.
- Feb. 15-20.—St. Louis, Mo., Annual Show, St. Louis Dealers and Manufacturing Association.
- Feb. 15-20.—Detroit, Wayne Pavilion, Automobile Show.

Mar. 6-13.—Boston, Mechanics' Building, Seventh Annual Automobile Show, Boston Automobile Dealers. Chester I. Campbell, Manager, 5 Park Square.

Mar. 27-Apr. 3.—Pittsburg, Duquesne Garden, Automobile Show, Pittsburg Automobile Dealers' Association.

Races, Hill-Climbs, Etc.

Nov. 26.—Savannah, Ga., Grand Prize Race, Savannah Automobile Club and Automobile Club of America.

Jan. 1-2.—Philadelphia, Two-day New Year's Run of the Quaker City Motor Club.

### FOREIGN.

#### Shows.

Nov. 28-Dec. 13.—Paris, Eleventh Annual Salon de l'Automobile, Grand Palais, Automobile Club of France (Pleasure Vehicles, etc.)

Dec. 20-28.—London, Stanley Show, Agricultural Hall.

Dec. 22-29.—Paris, Eleventh Annual Salon de l'Automobile. (Commercial Vehicles, etc.)

Jan. 16-25.—Brussels, Show Organized by Belgian Chamber Syndicate, Palais de Cinquantenaire.

### NEW DEPARTURE TWO-IN-ONE BALL-BEARING.

There are few places on the automobile where improvement has not been brought about by the substitution of an anti-friction type of bearing for the plain types formerly employed, but there are likewise few places on a car where the problem has not

been complicated to greater or less extent by the fact that both thrust as well as radial loads have had to be carried. The front wheel hubs, for instance, where the thrust load not only frequently equals the radial pressure on the bearing, but sometimes exceeds it. The bevel gear drive, differential, and gear-set also afford instances where the requirements call for a bearing



Assembled Bearing Complete.

capable of sustaining a thrust load that is often practically the equivalent of its radial carrying capacity. The New Departure Manufacturing Company, Bristol, Conn., has been devoting its efforts to the development of a ball-bearing that would be capable of not only sustaining equal thrust and radial loads, but which would be capable of bearing greater loads for its size, and the result has taken the form of the New Departure "two-in-one" annular ball-bearing, which first made its appearance on the market early in the year.

While especially adapted to automobile use, owing to its dual ability as expressed by its title, it has also been designed for general use and has already found numerous applications in special machinery and for power transmission. Its value in automobile work would arise from its ability to withstand radial or thrust loads, or any combination of the two, with the use of but a single bearing-mounting. In order to bring about this result,

two rows of balls are employed in staggered relation to one another, and the ball races are so arranged that the line of pressure is either at an angle of 45 degrees or 60 degrees with the horizontal, when the axis of rotation of the bearing is in a horizontal plane. The makers claim this has been accomplished without departing from that simplicity which characterizes the usual type, and that is evident from the fact that exclusive of the balls there are but five parts to the complete bearing, and

when the latter is assembled these are permanently combined, making the bearing self-contained.

These parts, in the order of their assembly from the shaft outward, are the cone, the separator, the two cups and the shell, the order in which they are named being illustrated by the cut showing the dismounted bearing, while their relative positions are shown in the cross-sectional view of the bearing. From this it will be evident that the line of pressure of the cone, cups, and balls makes an angle of 45 degrees with the horizontal, something which is equally true of both rows of balls, this feature adapting the bearing to withstand a load from any angle, while the additional row of balls is said to increase its capacity one and one-half times. Two semi-circular races are turned in the cone to receive the balls, while the sheet steel separator is so stamped that the ball retaining notches are staggered with reference to each other. These openings are made slightly larger than the ball diameter, so that the contact between the ball and separator is said to be a point contact at one end of the axis of rotation, while the weight by separator is carried on the balls at the top of the bearing. By maintaining the relative positions of the balls at all times, cross friction is claimed to be entirely eliminated, while the friction introduced by the use of the separator is practically a negligible quantity. One of the most radical departures in the construction of this bearing is its permanent assembly, sufficient metal being provided in the shell to permit of drawing the latter tightly over the cups; this, the makers claim, absolutely maintains the relationship of every part of the bearing. And they are so perfectly confident of the status of every bearing that leaves their works that this is an advantage in many ways. A large range of sizes is now being manufactured, for which standard dimensions of bore and outside diameter have been adopted.

### LICENSED STATUS OF THE E-M-F SETTLED.

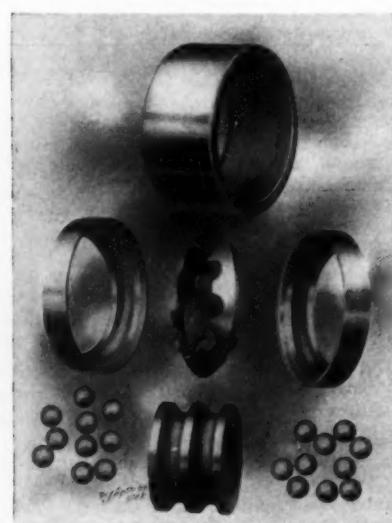
Ever since the formation of the Everitt-Metzger-Flanders Company, of Detroit, there has been more or less confusion regarding the status of the Northern Motor Car Company, as well as of the relation of the new company to the licensed association. The Northern Manufacturing Company joined the A. L. A. M., April, 1903, later changing its title by amendment to its charter to that given above, and this corporation sought permission to assign its license under the Selden patent, which carries with it membership in the Licensed Association, to the new E-M-F Company. This permission has just been granted, and the transfer includes all the business of the Northern company. While this winds up the existence of the latter as a factor in the automobile industry, former purchasers of Northern cars will be cared for by the new company.

When seen at the Association headquarters, Mr. Metzger said that the formal transfer of the property had been completed, and the work of organizing the factory forces of the new company was so well advanced that he felt confident the 10,000 cars the company had planned for would be completed in time for delivery during the coming season.

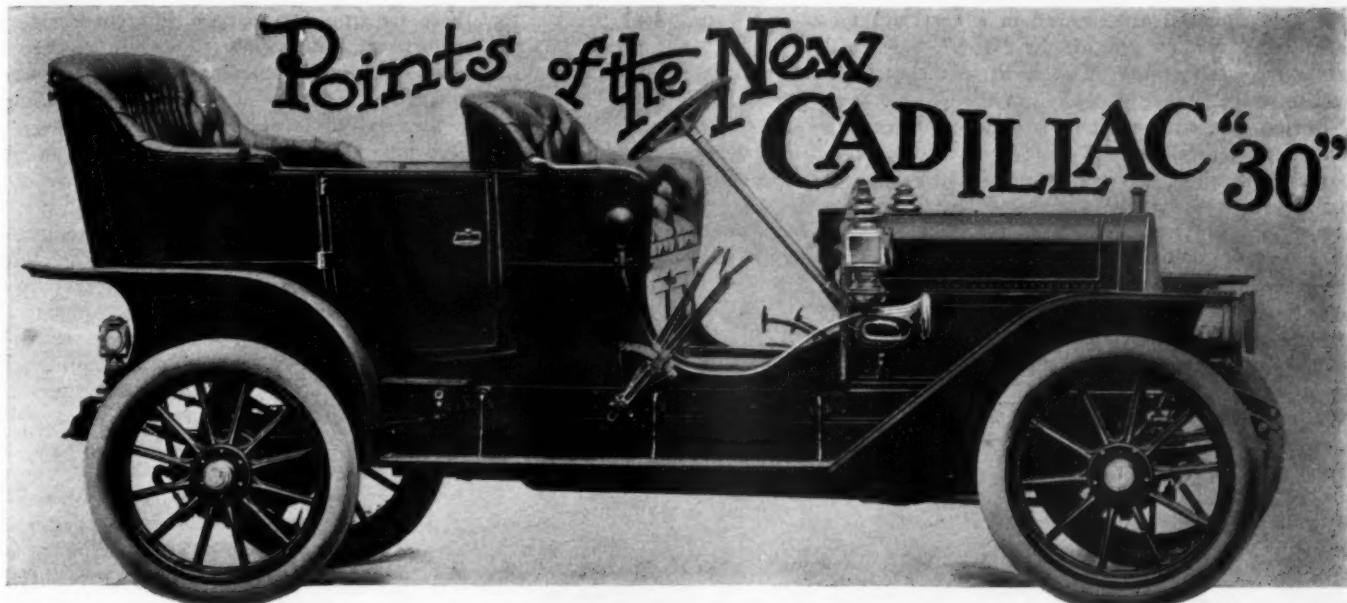
The officers of the E-M-F Company are: President, Byron Everitt; general manager, Walter E. Flanders; treasurer, Charles Palms; secretary and general sales manager, William E. Metzger.

### SHAWMUT PLANT SUCCUMBS TO FLAMES.

BOSTON, Nov. 13.—The plant of the Shawmut Motor Company in the suburban town of Stoneham was destroyed by a fire which started in the factory building early this morning. It was discovered by the night watchman, but so rapidly did the flames spread over the oil-soaked floors that the combined efforts of the local fire department and companies from the surrounding places of Winchester, Wakefield, Melrose, and Woburn, could not stop its headway, and besides burning the Shawmut plant it consumed three tenement houses and narrowly missed a church. In the factory were ten finished cars and others in process.



The Various Separate Parts.



THE 1909 undertaking of the Cadillac Company of Detroit, Mich., will prove of especial interest to the many Cadillac adherents, and undoubtedly will swell that pronounced contingent as well. The Cadillac company, in view of its great experience, consistent practices, and sane policies, is well qualified to meet the demands of 1909. The Cadillac "30" is a commodious touring car of conventional design, seating five passengers with ample room, has a wide side entrance, rich upholstery, and a display of taste in the finish. Easy riding is due to adequate springs and a harmonious relation of power and weight, and the distribution of the same. The road performance will be that due to a 106-inch wheelbase, standard tread, 32-inch wheels, with 3½-inch pneumatic tires and adequate power.

**Some Features of the Motor.**—Rated by the company at 30-horsepower, with cylinders 4-inch bore and a stroke of 4½ inches; cylinders and pistons of fine gray cast-iron from the Cadillac foundry. The water jackets are of copper, securely placed, and the valve details are usual to the Cadillac products. The crankshaft of chrome (alloy) steel is supported on five good adjustable bearings, is balanced, and runs in true centers. This same crankshaft is so nicely designed and fashioned as to enormously enhance the value of the motor in question.

The connecting rods are of die forged special steel, nicely shaped, and balanced with pistons to afford a true kinetic balance of the reciprocating parts insofar as such a condition is possible. The crankshaft is offset to relieve the pistons of undue pressure, and the valves (inlet and exhaust on one side) are interchangeable, of liberal size, and the valve gear (tappets, etc.) are up to the usual Cadillac standard, including hardened steel cams. The crankcase of aluminum is of rigid construction, due to the scientific design, with walls thick enough to abort noise. The half-time gears are of ample proportion, and are noiseless, since they are set to run on the pitch line, and are profusely lubricated.

#### Motor Accessories.—

The water circulation is vigorous, due to the working of a gear pump. The cooler is of liberal size, attractive appearance, and is made of vertical copper tubes, passing through closely pitched horizontal copper plates. The fan is of liberal size, and placed just back of the radiator, under the hood.

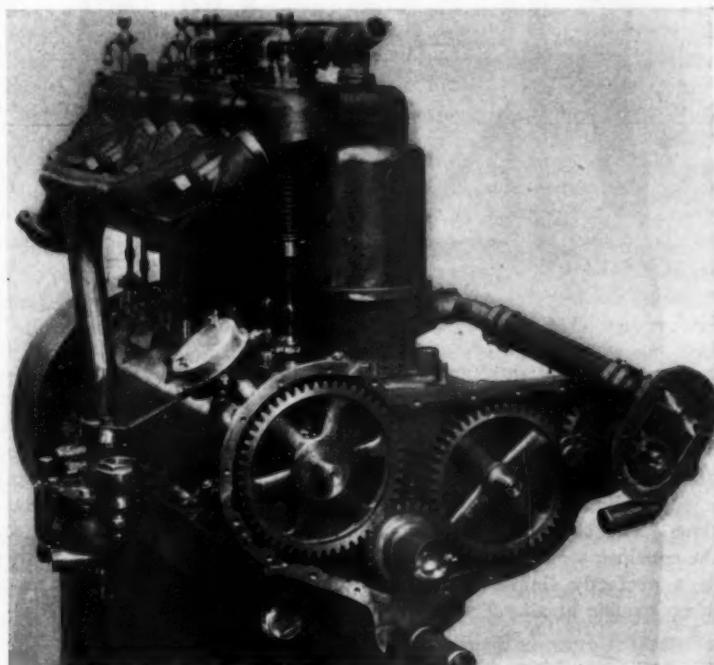
**Fuel System.**—Includes a Cadillac float feed carburetor of well and favorably known characteristics, healthy piping and a commodious copper gasoline tank. The lubrication system on the Cadillac "30" is especially noteworthy. It is a continuation of the well-known Cadillac system, including a double-acting force pump and an oil pan in the crankcase, with an oil reservoir alongside the motor. The oil from the reservoir is pumped through the "sights" to the places demanding lubrication, which includes maintaining the level in the motor case oil pan, from which the distribution is by "splash" of an improved form.

**Ignition System.**—The magneto system comes as an extra and the regular system is by jump spark, storage battery, and auxiliary dry cells. The quadruple coil is located on the dash, and is appropriately finished. The muffler is rather more ambitious than custom dictates, in that it not only serves to subdue the noise, but it is provided with a cut-out that serves as a "safety" as well. Moreover, the exhaust may be directed to a whistle and a footwarmer at the will of the autoist.

#### Transmission Gear Set.

—The primary transmission is by means of a clutch of suitable design, thence through the main shaft to a selective type gear set. Three speeds and reverse are provided, and the gears, shafts and high duty parts are of right design, using chrome nickel steel. The gears, etc., are heat treated, and the accuracy of finish assures duplication of parts. The shafts and spindles rotate on annular type ball bearings, and the work as a whole shows the earmarks of quality. The sliding is through a nicely designed side lever, on the right, while a foot pedal operates the clutch.

**Pertinent Chassis Features.**—Channel section side frames and laterals of



The Motor of the 1909 Cadillac "Thirty."

the same material are secured in a neat and substantial manner. The frames are of the "drop" type, with an eye to ground clearance; the offset is to 30 inches in front from 33 inches at the back.

**Spring Suspension.**—This is of the platform type at the rear and half elliptical fronts. Ball joint shackles are used; spring perches are rigid, but the rear perches are free to oscillate, hence the springs are free to perform their functions. The live rear axle housing is of cold drawn seamless steel, with a good ground clearance under the differential. Annular ball and Hyatt roller bearings are used, and the wheels are pressed into tapers at ends of the shafts. From the transmission gear set to the rear axle the propeller shaft is provided with universal joints in oil tight housings, and rolls on annular type ball bearings. The front axle is also a seamless cold drawn tube with drop forged steel sockets electrically welded to place. The wheels, artillery type, are of selected second growth hickory of appropriate design, with substantial steel hubs, front and rear, accommodating  $32 \times 3\frac{1}{2}$ -inch tires. The front wheels rotate on two-point ball bearings, with  $\frac{3}{4}$ -inch balls inside and  $9/16$ -inch balls outside. The cones are tool steel.

**Braking System.**—Two pairs of powerful double acting bands engage on drums attached to the respective rear wheels. The brakes are compensating, of good diameter and wide face. One set is internal expanding while the other is external constricting. The facings are camel's hair fabric. The control of the brakes is by means of a foot lever for the service brakes, working the constricting bands, while the emergency brakes are of the expanding order, also by a foot lever. Means are provided for take-ups and adjustment at all points.

**Steering System and Control.**—The mechanism is of the worm and worm gear type, fitted with two ball thrust bearings, and with especial care not only to eliminate lost motion but to keep it out. The linkages are of strong design, good appearance, and with ample bearing surfaces. The spark and throttle levers are conveniently situated upon the steering post.

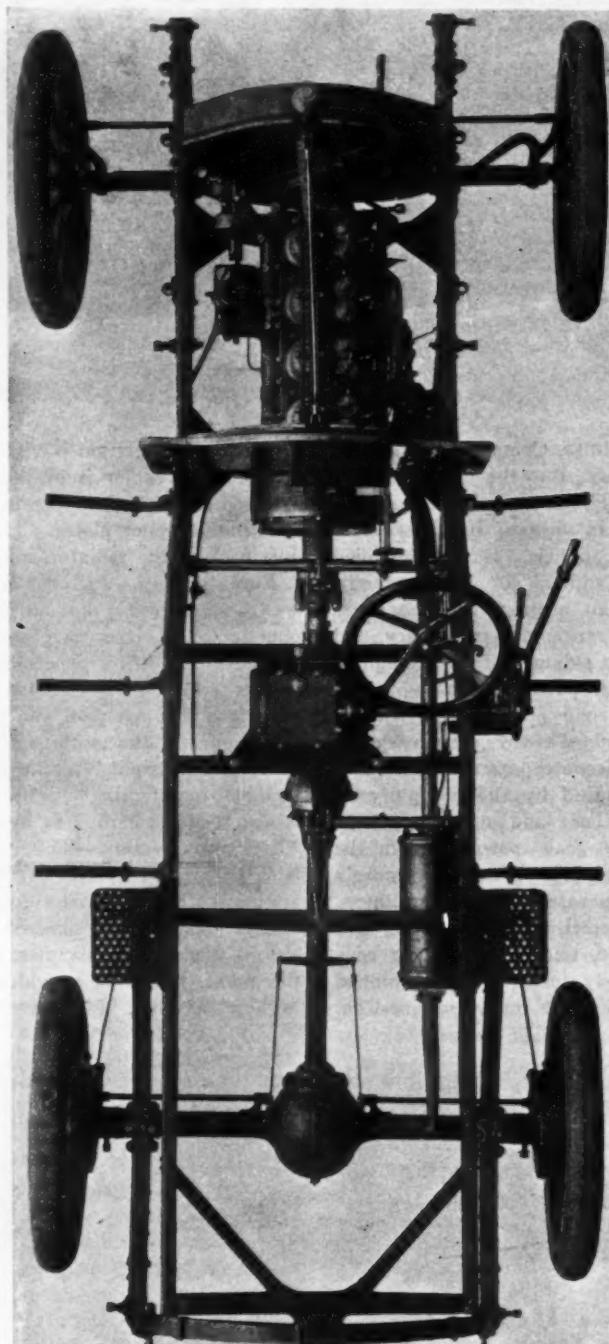
**Some Pronounced Cadillac Tendencies.**—Particular attention is called to the facilities afforded in the Cadillac establishment for turning out accurate parts, thus assuring ease of replacement in due course of time. The cursory examination of an automobile might lead to the conclusion on the part of the uninitiated that a replacement is a perfectly simple matter in relation to which there should be no trouble at all. They over-

look the fact that there are from 800 to 1,000 different kinds of pieces in a well designed car, and possibly 50 per cent. more of such units involved in an inferior design. There is no way under the sun by which a car can be assembled without using a sledge hammer, a file, and "cuss" words, unless the interrelating members are ground to a finish within limits of "tolerance" well below a thousandth of an inch.

A visit to the Cadillac plant will disclose complete sets of the finest instruments of precision and a testing equipment sufficiently commodious to enable them to make a running test on every automobile shipped, even in the hurry season, when the pressure for deliveries is most felt. The Cadillac Company makes no secret of their splendid facilities along these lines, nor are the conditions enumerated merely new to them, hence a novelty to be heralded from the rooftops. As pioneers in automobile work, with a considerable previous practice along lines involving the manufacture of machinery, they were in a position to realize the necessity for check methods in the shop, and means for arriving at the true state of affairs without waiting for disagreeable returns from their patrons.

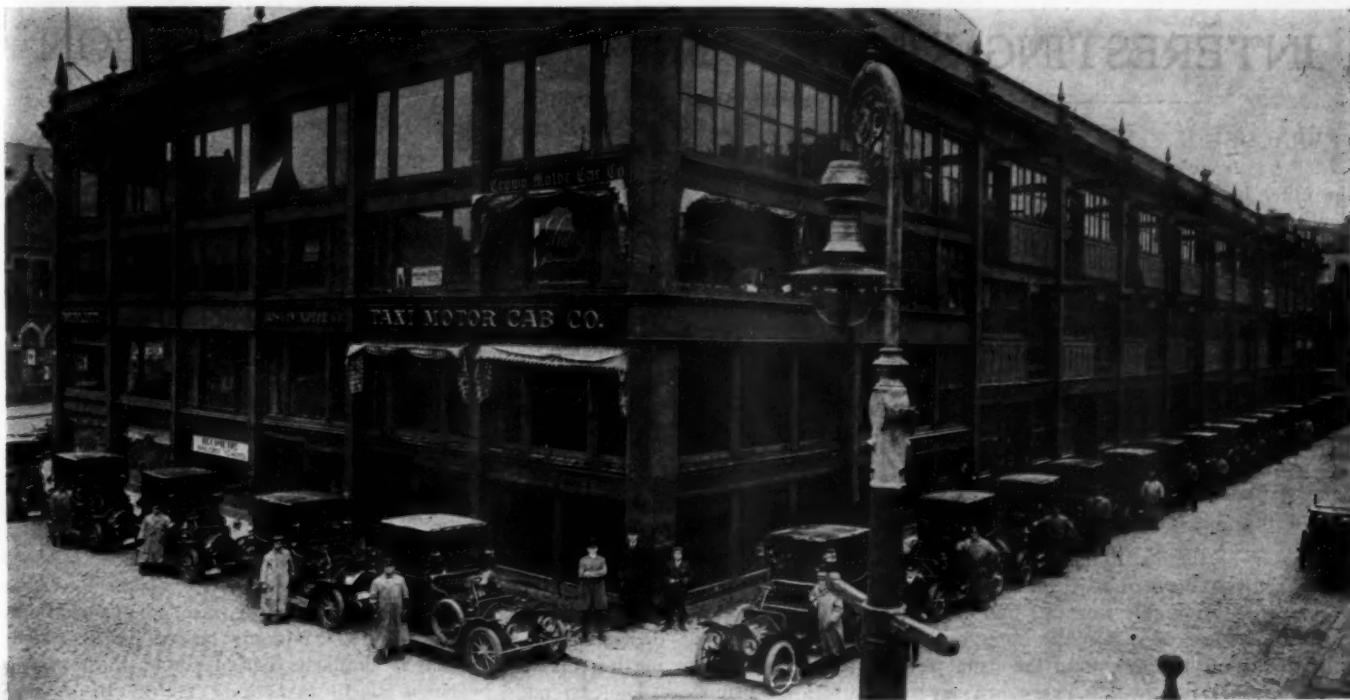
Fortunately a large number of automobiles cannot be built in a haphazard way, if they are intended to run for any length of time at all without hesitating at the brow of every hill. The haphazard method of doing things does not of course involve quality.

There is one other point made by the Cadillac Company that should be of interest to their patrons, *i.e.* the shop system was especially devised with the idea of accomplishing the respective tasks within a pre-scheduled time. It was not the purpose to try to do things within less time than they naturally would take, for that would end in a slight to quality, but it was with the intention of arranging the start at the propitious moment. Deliveries may therefore be expected with a precision not to be outdone.



The Cadillac's Neatly Proportioned Chassis.

**Standard Finish of All Styles.**—The standard color is royal blue, including body, hood, frame, axles and wheels, with light blue striping. The fenders and radiator are baked black enamel. The dash is highly finished mahogany with brass edges. The door strip and hood sills are also mahogany. The seats are luxuriously upholstered in full hides of hand buffed black leather, tufted over deep coil springs and fine quality genuine curled hair. The car will be made in three styles, touring car, roadster, and demi-tonneau. Price is \$1,400, f.o.b. Detroit, including three oil lamps and horn.



Headquarters of the Taximotor Company, of Boston, in the Motor Mart, Park Square, and Its Equipment of Thomas Taxicabs.

## HUB UNEXPECTEDLY IS CAPTURED BY THE SWIFT TAXICAB

BOSTON, Nov. 16.—“But Boston is so very different. You can’t compare it with other cities, and particularly with New York. What would go down there wouldn’t take with us at all, and people don’t want taxicabs.” So said the many wise-acres who thought they knew what the staid population of the Hub was hankering after in the shape of urban transportation, and they would have none of the new innovation. Mind you, these were the men who had been making a living out of Boston’s needs for going to the theater, shopping, and the hundred and one other uses to which the cruising hack is put for time out of mind, but they could not see the taxicab at all. And that was only last July.

What has happened to their theories and their cocksure opinions about what the population of the country’s center of culture in the few months intervening may best be illustrated by the photograph recently taken of the morning line-up for inspection at the headquarters of the Taximotor Company, which has extensive offices and shops on the Church street side of the Motor Mart. It shows no less than 40 of the handy little Thomas taxis, comprising the entire fleet attached to the Boston concern at present, but the number will not long remain at this figure if Manager W. P. Barnhart’s appeals to the Buffalo factory for more have any effect, for by “more” Mr. Barnhart means 20 additional cabs, or an increase of 50 per cent. at a lick.

Old-time livery stable keepers may have thought that Boston’s population did not want to thrust the equine and his two-wheeled chariot out of their affections in the unfeeling manner that has actually taken place, but the developments of the past quarter tell a very different tale indeed. And it is not the result of any change of heart on the part of these self-constituted authorities, but is due wholly to the push and hustle of the E. R. Thomas Company in showing the old-timers that the open season for competition between gasoline and horseflesh was on in earnest and that the people of Boston wanted taxicabs just as much as did the cab riders of other American cities, whether the men who had collections of worn-out two-wheelers and “chemical” four-legged motors that they were averse to relegating to the scrap heap and the farm, willed it or not. Persuasion and com-

mon sense business arguments availing nothing, the Thomas company gathered its forces and lit on the cab business of the Hub. It organized the Taximotor Company, which was duly incorporated with W. P. Barnhart as manager, and A. Z. Mitchell, of the Thomas home office, as treasurer and secretary, and opened up shop in the Motor Mart with a few cabs.

The start was actually made on July 18 last when 20 of the Thomas cabs first reached there and were put in service, so that Boston’s appreciation of the improvement they represent over former methods of transportation may be readily gauged by their increase in the interim. But it has not been all plain sailing by any means—quite the contrary, in fact; so that much of the result accomplished in that very short space of time must be credited to the energy with which the problem has been attacked right from the start. As an example of the uphill nature of the task, the innovators found confronting them may be mentioned the obstructive tactics of the police, the commissioners being very much averse to granting licenses to the drivers *at all* at first, on the highly enlightened ground that the presence of these vehicles on the streets would have a tendency to obstruct traffic in the crowded portions of the city. And this from the omniscient center of thought! The italics are the writer’s, but they fail to equal the occasion. Naturally, established interests in the same field did not hesitate to add the weight of their influence in retarding as much as possible the introduction of the motor-driven cab, but it was a foregone conclusion right from the very outset that the Bostonians were quite as much in a hurry to get there with increased comfort at the same expense for traveling as were the inhabitants of some less enlightened centers of population that might be mentioned.

But despite drawbacks of every nature, opposition, police discrimination, impossibly green drivers and the hundred and one kinks that have to be straightened out in the course of establishing any new innovation firmly on its feet, the taxicab has taken the Hub bodily. This is shown by the fact that the cars of the Thomas fleet make an average of \$20 a day, and business is so good that many more could be put into service at the same remunerative rate.

## INTERESTING KINKS IN FRANKLIN CONSTRUCTION

By CHARLES B. HAYWARD.

**S**YRACUSE, N. Y., Nov. 16.—Whether it be due to the fact that the average publicity man is not mechanically inclined, or, on the other hand, has more than enough to do with his own particular worries, certain it is that he seldom gets beneath the surface in sending out information regarding the cars his company is making. He tells the specifications of new models in stereotyped form, and expatiates on the improvements made in comparison with the particular form of design or construction that previously characterized the car, but he rarely tells what the car is made of, or how it is made, except by the trite phrases "Of the very best materials," and "By the highest skilled labor," which have accordingly come to mean about as much as the "Havana" cigar, and other incidents of daily life, the truth of which goes unquestioned merely through long asserted repetition.

### Much to Be Seen in the Franklin Factory.

Thus it is that a tour of inspection through one of the large factories devoted to the manufacture of automobiles is a matter of considerable interest, and the home of the Franklin cars at Syracuse, owing to the numerous features which distinguish them, offers more than the usual reward as a compensation for the time spent. There are several matters of prime importance in the construction of any car that might well be made more of in publicity announcements, such as the thorough testing out to which the entire transmission of the Franklin cars—the gear-set, propeller shaft and rear-axle driving unit—are subjected to in connection with a hydraulic brake, before being mounted on the chassis, but it is naturally the little things that strike the initiated eye more forcibly.

One of these is the practice adopted by Designer Wilkinson of shrinking a steel band on the periphery of the flywheel, thus enabling a light wheel of large diameter to be employed with perfect safety in connection with a high-speed motor. This in itself is a very small thing, but it forms a striking illustration of the painstaking attention to detail that is manifest in every part, beside being an indication of the fact that expense is not spared to attain lightness.

Probably nothing strikes the experienced visitor quite as strongly as the multitude of operations necessary to the completion of the Franklin wood frame, when compared with the small amount of handling that the now practically universal pressed steel frame calls for before it becomes a component part of the car. And, unlike the latter, this handling begins long before the raw material reaches the factory at all, for in order to be absolutely certain of its supplies the Franklin Company buys the timber standing and seasons the ash strips at its own plant. Ash has been selected as the most suitable material, not alone owing to its strength and lightness, but likewise for its great resiliency. Instead of using a single piece for the side members, flaws are absolutely guarded against by the laminated construction adopted, the pieces being glued and screwed together throughout their length while the joints are protected by facing strips top and bottom, and aluminum end pieces.

### Franklin Frame Construction Speaks for Itself.

What the Franklin frame is capable of withstanding has probably never been more strikingly illustrated than was the case when it survived the shock of meeting a stone wall at 40 miles an hour on one of the record-breaking transcontinental trips, and its durability is even better vouched for by the report current among Syracuse garages that a greater number of pressed steel frames receive the kindly attentions of the Franklin repair department in the course of a single season than have ever been known to default in the case of the laminated ash frame during the entire period that this construction has been in use, which means since the Franklin has been on the market.

Franklin and air-cooling are inseparably associated and not a

few of the interesting operations to be seen in no other plant of the kind have to do with the motor. The latter, with its dome-shaped head and combustion chamber, concentric valves and auxiliary exhaust, is absolutely *sui generis* in the world of automobile motors, but its features are too well known to call for further description. An item of interest in connection with its construction is to be found in the manner of shrinking the stamped steel cooling fins on the cylinder castings, these light flanges being made too small to pass over the cylinder when cold. They are expanded by immersion in a bath of tar or asphaltum, maintained at a temperature in excess of that reached by the motor in operation, and then readily slip over the casting. The arrangement of flanges on each cylinder varies according to its location on the crankcase, the first cylinder naturally requiring less cooling than any of the others; the second needing slightly more than the first, and the fourth more than any of the others, the amount of surface presented by the flanges reaching its maximum in the case of the latter, as the effects of convection are least in the case of this cylinder, owing to the fact that the air is already heated before reaching it; this arrangement is similarly carried out on the sixes.

Die-cast main bearings constitute another feature of interest on the Franklin, particularly as the Franklin company was responsible for the development of this particular process and made use of it for other commercial applications before undertaking the manufacture of automobiles. With its aid, bearings that do not vary a thousandth of an inch are obtainable, thus doing away with the laborious and costly hand-fitting necessary in assembling the ordinary poured bearing and making it possible for a Franklin owner to obtain an absolutely interchangeable duplicate of a bearing for his car at any time.

### Resilient Wood Saves Many a Jar.

The underhung arrangement of the full elliptic springs is another Franklin feature that has been consistently adhered to and which accounts in large measure for the easy riding of the car, although the designer does not attribute this exceedingly desirable characteristic to the feature of suspension alone, for while it is essential to absorb as much of the shock as possible, and nothing is quite equal to the full elliptic spring in this respect, it is quite as important to deaden what does get past the springs, and for this purpose nothing is in the same class with a resilient piece of wood. As one of the Franklin engineers inquired, "Did you ever try to break a rock with a steel-handled sledge hammer?" Hence this added function of the wood frame which could hardly be more appropriately explained than by the foregoing query, as anyone who has ever tried the expedient mentioned has no desire to repeat it.

Whether it be in the machine tool departments, the assembly floor, motor testing rooms, or the capacious body building shops, there are numerous operations, the manner of carrying out which is apt to hold the observant eye longer than necessary to give the casual glance and nod of assent to the guide's statement usually accorded the general run of routine work. And in noting that many things are done differently, when mental comparison is made of the results of more or less recent visits to other shops, with what is now passing in review, the conclusion is forced home that many things are likewise done better. As is the case with old established makers, the builders of the Franklin turn out a very large proportion of all the finished parts that enter into the construction of the car, and nothing is left undone to make each component as perfect as is possible with the best facilities obtainable for the work. The plant is several stories high and spreads over a considerable space of ground, an addition providing many thousand square feet of floor space having been just completed, this having been found necessary to handle the increased output.



Henry Farman En Route on His First Cross-country Aeroplane Trip.

PARIS, Nov. 10.—Flying has entered upon a new era, the era of journeys from town to town, and from point to point. It is Henry Farman, the first European to cover a circular kilometer, who has established a unique record by a flight from Châlons-sur-Marne to the old cathedral town of Rheims, separated by 17 miles, covered in 20 minutes.

Since returning from New York the Anglo-French aeronaut has not been seen much in the neighborhood of Paris. He had sworn never to fly again at Issy-les-Moulineaux, the ground on which he won the \$10,000 prize last January for a kilometer flight, and had been busy searching for a more suitable training ground further afield. Châlons-sur-Marne, to the east of Paris, was selected, and it is here that several flights, none of them of very great importance, have been made during the past six weeks.

On a recent Saturday afternoon more careful preparation than usual was made, but although there was enough gasoline on board to make a flight of three hours, it was not generally known that the machine would pass out of the limits of the flat military ground. On the first swing of the propeller the engine started; a second later the assistants had released hold, and Farman and his aeroplane were soaring aloft to a height that appeared unnecessarily high. A few seconds' maneuvering, as if seeking his bearings, and the pilot was off in a straight line for Rheims, the cathedral of which could be clearly seen from the steering wheel of the artificial bird 200 feet above the ground.

"He's going across country," yelled the small crowd, and immediately there was a rush for the cranking handles of the automobiles, a banging of doors and a rattle of changing gears. The country being absolutely flat, it was possible to follow, watch the flying machine pass over the railroad, rise considerably higher, and fly over the small forest of the Grandes-Loges. The passage of the Marne Canal stopped the pursuing automobiles for a few sec-

onds, and Farman disappeared from view. But a few minutes later he was seen again, now passing over the village of Petites-Loges, leaving the church steeples of Verzy and Verzenay on his right, now flying over Beaumont, now over the river, sailing above St. Leonard, and finally settling down near the Pommery wine establishment on the outskirts of Rheims.

"Yes, those first few minutes up aloft, with unlimited space before me, were rather exciting," declared Henry Farman when questioned about his flight. "Even before I had cleared the flat military ground the question cropped up, 'What will happen when I get above those tall popular trees over there at Mourmelon?' A touch of the elevation rudder and the machine had

risen still higher. Nevertheless, it was impossible not to feel anxious as I soared over the forest of waving green, and to ask again and again 'Am I high enough to clear?'

"You say that I was 250 feet high? Well, it is doubtless true, but I never realized it, for all the time I had the impression of being very near the tree tops. But when the forest was passed there was another difficulty in the mill and the village of Mourmelon. I watched the wind closely, for above these high trees there are eddies and currents which tend to draw you down, while over the open spaces there are air currents which cause you to rise higher. But the machine never faltered. It was a severe nervous strain, watching the wind and paying attention to the steering, while at the same time listening with all one's might for a 'miss' in the motor. But despite this it was the finest moment of my life to soar above my fellow men, to pass above the fussy railroad engine spitting out fire and smoke, to look down at the automobiles raising their cloud of dust on the white highway, to soar free and unfettered in the pure heavens."

The distance in a straight line from the Châlons camp to the outskirts of the city of Rheims is 17 miles, which, having been



Clement Dirigible Airship Containing Most Powerful Aerial Motor Yet Built.

covered in a fraction under 20 minutes, gives an average speed of about 51 miles an hour for Farman on his record trip. The rate of travel is faster than that generally maintained by Wilbur Wright, but is slower than the average speed of Bleriot, the chief of the monoplane school. The comparison, however, is not altogether a fair one, for the monoplane is by its nature a much faster type of machine than the biplane as used by Farman, Wright and Delagrange.

Farman's first flight was made a little more than a year ago—October 26, 1907—when he covered 770 meters at Issy-les-Moulineaux and won the Archdeacon cup. On January 13 of the present year he covered a kilometer in a closed circuit and became entitled to the Deutsch-Archdeacon prize. On March 21 he made a European record of 2,004 meters in 3 minutes 31 seconds. As the Wright brothers were not then generally believed in, this was claimed as a world's record. The next important flight was on July 6, when Farman remained aloft 20 minutes 19 seconds, winning a prize of \$2,000 offered by M. Armengaud for not less than 15 minutes in the air. Demonstrations in Belgium and near New York, none of which devel-

end, and when the pilot finally realized what had happened he came down with such a run that a few of the ribs of his machine were broken. Mechanics worked all night fixing things up, and next day all seemed favorable for a free soar.

Bleriot mapped out his course; from his field at Toury, near Chartres, he was to reach Artenay, swing round some captive balloons placed there to guide him, and regain his starting point, making a total distance of 20 miles. The outward journey was made without difficulty, but at such a high speed—the estimate is 65 miles an hour—that the pursuing automobiles were left behind, and for a short time the aeroplane was completely lost to view. When found, Bleriot was in a field, verifying his magneto, which had suddenly developed symptoms of irregularity. An hour and a half later all was right again, and without any outside help the flying machine rose into the air and continued its interrupted trip. Before the starting point was reached again there was another stop, of a few seconds only, in order to verify the working of the engine. Again Bleriot was able to get away without outside help, and at 5 o'clock fluttered down at the door of his shed, so satisfied with his first free trip that he declared

he would never again be content to circle round and round a field.

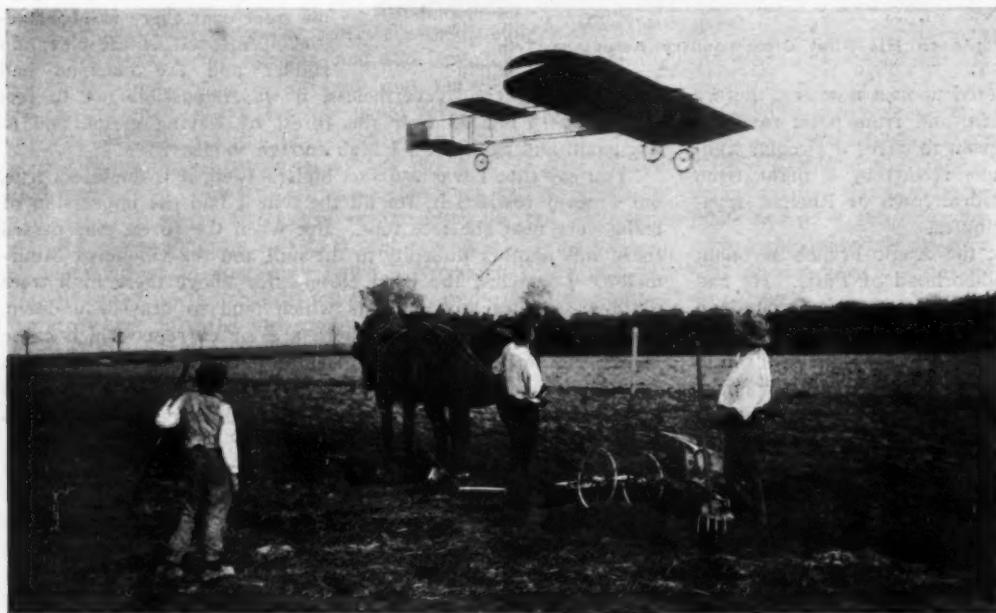
The two cross-country flights, one with a biplane, the other with a monoplane type of machine, have sent France delirious with joy. Though Farman owes allegiance to the British crown, he has lived so long in France that he is claimed as a native, and the two performances are looked upon as a national victory which will lower the prestige of Wilbur Wright. The natives have begun to take courage and to remark that after all they are as good flyers as the American. More thoughtful followers of the sport point out that if Wright is not willing to break away from his regular routine at Le Mans he runs the risk of finding himself deserted in the middle of France, for there is much more interest in a free

flight across country than in the most wonderful work over a chosen ground. Doubtless Wilbur Wright will not be sorry if this does happen, for he has never sought crowds.

#### Over \$221,000 Offered in Aeronautic Prizes.

PARIS, Nov. 12.—Over \$221,000 in cash prizes is offered by various European bodies for competition among pilots of flying machines of the heavier-than-air type. The list is headed by the \$50,000 prize of the *Daily Mail* for a flight from London to Manchester, a journey that is not likely to be attempted during the next twelve months. Michelin's annual prize of \$4,000 will be awarded to Wilbur Wright at the end of this year, if the present long distance record is not beaten in the meantime. The flight from Paris to Clermont Ferrand, also proposed by the tire manufacturer, is not likely to be attempted during 1909. The Grand Prix of the Aero Club of France and the \$20,000 offered by the Monaco Sporting Club will both be won before the end of the coming year.

The sum of \$2,500 will doubtless be won during the next six months by a flight over the 20 miles of water separating France from England, and a further sum of \$5,000 awaits the first pilot to carry Commandant Renard across the English Channel on either an aeroplane or a dirigible balloon. There are \$2,400 for the aeroplanist who will risk a flight across the city of Paris.



Bleriot's Extended Flight Startles the Peasants at Work in the Fields.

oped any remarkable performances, occupied the rest of the summer, and it was only a few weeks ago that Farman settled down to serious work at Chalons.

Farman's winning of the height prize, which took place near Chalons 24 hours after the cross-country run, was a very tame affair. A line of balloons was stretched 82 feet from the ground, and the aeronaut told to fly over it. On the first attempt Farman cleared with 10 or 12 feet to spare, settled down to the cheers of the crowd and was the possessor of a cash prize of \$500.

#### Bleriot Next Made Cross-Country Flight.

PARIS, Nov. 11.—Right on the heels—or should it be the wings?—of Farman, Louis Bleriot has attempted and accomplished a cross-country journey. Bleriot's flight loses much of its éclat by reason of it being attempted 24 hours after that of Farman, and also because two stops were necessary before the trip was finished. Bleriot, who had been training on the Bruce Plains for several days, principally with a view to winning the height prize, resolved, when he heard of Farman's record, to do something equally as good. His machine was smashed, for during the afternoon he had attempted a flight with the guide ropes of the elevation rudder crossed, with the consequence that when he wanted to come down he went up, and when he wanted to rise he descended. At one moment the monoplane stood almost on



**A**T one stage of the proceedings attendant upon the final festivities in connection with the Vanderbilt Cup race of 1908, the famous artistic silver trophy shared the same reposing table with the plutocratic gold cup of the 1908 Grand Prize race at Savannah, scheduled for Thanksgiving Day.

The incident came last Thursday night at the West Fifty-fourth street home of the Automobile Club of America, to which came a thousand and a few more to see the formal presentation of the Vanderbilt Cup to the proper officials of the Locomobile Company of America and to honor the maker and the designer, and the driver and his mechanic. The invitations were issued by the Cup Commission in behalf of the Locomobile Company, which was the host of the occasion.

The function being in the A. C. A. clubhouse, it was an expected courtesy that President E. H. Gary should be the first speaker introduced by Russell A. Field, who pleasingly filled the post of master of ceremonies. Judge Gary congratulated the Cup Commission on the conduct of the race, the maker and designer upon the production of the winning car, and the driver and mechanic who were so instrumental in securing victory. "Give Americans a little longer to prepare, and they will always occupy first place," said President Gary.

William McAdoo, a former police commissioner of New York City, was the succeeding speaker, and he supplied some excellent advice, which told the autoist that when the road was clear he could utilize his speed, but recklessness should be curbed and the rights of other highway users should be recognized.

Then came the presentation of the cup by Jefferson deMont Thompson, chairman of the Cup Commission; who formally turned the trophy over to S. T. Davis, Jr., president of the Locomobile Company. Among other things he said:

"This is an American year. We have won the athletic championship of the world, and we have won the classic trophy, to capture which in years gone by France, Germany, and Italy have spent a million dollars. It has at last fallen to the lot of an

American manufacturer, an American designer, and a driver with American blood in his veins to win it."

In accepting the trophy S. T. Davis, Jr., said that the winning of the cup had been the crowning achievement of three years of effort. The offering of the cup was due to the patriotism of William K. Vanderbilt, Jr., and his rules were responsible for the fine material and workmanship required of cup aspirants. Mr. Davis outlined the efforts of his company to win the cup, and gave all the credit to Mr. Riker.

There were loud calls for Designer Riker, who modestly declared that he had had little to do with the success of the car, which was due to the material and the skill of the workmen.

Winthrop E. Scarritt, a former president of the A. C. A. and also of the A. A. A., supplied one of his ebullient orations.

George Robertson, the pilot of the winning car, was a retiring hero, and accompanying him was John J. Hayes, winner of the Olympic Marathon race, the two 1908 international winners receiving the heartiest of receptions.

A. R. Pardington, the man responsible for prevailing upon Mr. Vanderbilt to offer the cup, told of the difficulties of the first races. Mr. Pardington declared that the parkway will be so far completed next year that both the Vanderbilt and Grand Prize races can be run over it exclusively.

Moving pictures of automobile events here and abroad were followed by a supper and a general jollification. Of course, there was racing talk and ideas of all kinds.

Among the notables in the throng were the following: J. A. Kingman, Joseph Tracy, Percy Owen, S. A. Miles, H. M. Swetland, Alfred Reeves, C. R. Mabley, Harry Fosdick, L. R. Perlman, W. D. Gash, Frank Eveland, Charles E. Miller, Alexander Dow, Peter Fogarty, A. W. Church, Harry Miller, Joseph Jones, Dr. J. N. Lanehart, chief surgeon of the race; Major C. J. Crowley, of the Irish Brigade; H. F. Donaldson, Rene Petard, J. J. Lannin, of the Garden City Hotel; H. F. Mollenhauer, J. J. Mann, of Paris; F. E. Moscovics, J. J. Woodward.



Popular Type of Garage with Well-Lighted Floors.

**Minneapolis, Minn.**—Deals have been closed for property on Hennepin avenue on which two of the largest garages in the country will be erected. The Maxwell-Briscoe company has plans under way to erect at Hennepin avenue and Ninth street a two-story building with basement fitted out in the most complete manner. Last week the Pence Automobile Company purchased the corner property at Hennepin and Eighth street. Work will be commenced at once on a six-story building with basement in which they propose to have facilities for doing all kinds of repair work. The building will have a heating and lighting plant in the basement, where power will also be generated for use in the shops.

**Madison, Wis.**—The Hokanson Automobile Company have started work on their new \$12,000 garage, which they hope will be ready for occupancy by December 1. The structure will have a ground floor 77 feet by 132 feet, in the rear a second story for the repair shop 38x77 feet. There will be an elevator in the building and the basement will be fitted up as a heating plant. The entire work is of steel construction, doing away with all posts, so as to give the greatest amount of floor space possible; in fact, they claim that the building will give them a greater amount of space than any garage in Wisconsin.

**Fond du Lac, Wis.**—A stock company has been formed by a number of the business men of Fond Du Lac, Wis., which has taken over the automobile garage and salesrooms formerly controlled by G. W. Worthing, and will immediately start work on plans for a new building designed for automobile sales rooms, repair and garage facilities. Mayor E. W. Clark is one of the prominent men in the concern, and with the aid of G. W. Worthing, who has been retained as manager, the arrangements will be rushed as fast as possible. The agency for the Jackson car has already been secured.

**Salt Lake City, Utah.**—Work has started on the new garage and salesrooms for the Tom Botterill Company of Salt Lake City, which when finished will be one of the finest structures of the kind in that vicinity. The building is to be of the Spanish mission style throughout, having a frontage of 67 feet and depth of 170, with full cement basement. Although the present plans only call for one story, the arrangements of the roof and walls are such that other stories may be added later if necessary.

**Westcott Garage Company.**—The garage and automobile business formerly conducted by Chas. H. Childs & Co., in Utica, has been purchased by the Westcott Garage Company. This new firm, which has just been incorporated with Addison Westcott as president and William B. Westcott as secretary and treasurer, are making numerous improvements in the building that they may be in better shape to handle the increased business and to make it more convenient for their customers.

**Asheville, N. C.**—The increasing popularity of the automobile has caused the organization of a new concern to be known as the Western Carolina Automobile Company, which will be located at 61 South Main street. The agency for the Cadillac has been secured covering seventeen counties in this section of the State. Provision is being made for a first-class repair department with competent workmen.

**Philadelphia, Pa.**—It is said that a five-story public garage is to be erected at a cost of \$500,000 on the corner of Broad and Fitzwater streets, which is to be directed by the Philadelphia Auto Company. Besides the thoroughly modern repair shop in the building, there will be 287 rooms, each large enough for two machines, which will be rented at \$25 and \$20 per month.

**Washington, D. C.**—The Auto Livery Company, which has built up such a prosperous business in Washington is putting up a new garage to accommodate 75 machines and 60 chauffeurs. Washington with its many visitors is essentially a place for the successful operation of an efficient taxicab service which this company has done its best to supply.

**Chattanooga, Tenn.**—George Reif and S. F. Webb have opened a garage at 10 West Sixth street and will do a renting, storage and repair business. They intend to take the agency for a well-known machine within a short time and will then move to Chestnut street.

**Harrisburg, Pa.**—Work is now in progress on the remodeling of the quarters of the Motor Vehicle Company, on Mulberry street. The new salesrooms will be 50 x 100 feet, with a large repair shop in the rear. The company will handle only Jackson cars.

**Findlay, O.**—Preparations are under way for one of the finest garages in the State outside of the larger cities. The C. F. Jackson Company has procured a lease in the Corwin block and will start immediately putting it in shape for garage purposes.

**Little Rock, Ark.**—W. L. Tedford is making arrangements for erecting a two-story brick garage of approximately 50 by 140 feet. Besides taking the agency for a number of cars, facilities will be provided for repairs and storage.

**Brooklyn, N. Y.**—The Grand Avenue Garage has just been incorporated in Brooklyn with a capital of \$10,000 by F. H. Knauss and E. V. Slauson, of this city, and C. L. Beare, of New York City.

**Minneapolis, Minn.**—Plans are being made for a garage to be built at 1900 Lyndale avenue for M. H. Davin. It is to be a two-story brick structure, 100x135 feet, and will cost \$12,000.

**Kansas City, Mo.**—The Kansas City Taxicab Company has approved plans for a three-story garage to cost \$50,000.



A Leading Garage in the City of Mexico.

## DIRECTOR PAGE ON THE FRENCH ROADS CONGRESS

**W**ASHINGTON, D. C., Nov. 16.—Upon his return from the International Good Roads Congress in France, which he attended as chairman of the American delegation, Logan Waller Page, director of the Office of Public Roads, Department of Agriculture, gave **THE AUTOMOBILE** correspondent the following interview regarding the work of the congress:

"Inasmuch as there were three official languages at the congress—French, German, and English—it was impossible to make it much of a deliberative body. It was possible, however, for a general exchange of views on many matters pertaining to roads, and we were given the opportunity to inspect some of the great continental roads, and the methods of maintaining them."

"The international bureau of roads, which was one of the things accomplished by the conference, and which was suggested by me, will have two or more representatives from each nation, and is patterned after the international bureau of navigation. The various members of the bureau will gather all the information regarding roads in their respective countries that may be of value, and submit it to the bureau. It will be gone over by experts, after which the information will be published and scattered all over the world."

Mr. Page had the satisfaction of seeing pass a resolution which he introduced, favoring the erection of a suitable memorial to the great French highway engineer, Tressauget. Tressauget pre-

ceded Telford and Macadam by 40 years, and in reality designed the broken stone road which is known as the Telford road. It was at his suggestion that the great system of what is called "continuous repair" road were established in France, and is still maintained. Under it a man, known as a cantonier, has charge of a certain section of the road, about five miles, and he goes over every foot of this daily, smoothing out irregularities, keeping the side drains clean, and trimming the trees and shrubbery.

"The reason French roads are so much better than other roads, and this a point that I wish Americans generally might realize," continued Mr. Page, "is that they are better kept up. The point to good roads is not so much their construction as their maintenance after they have been built. So far as road construction is concerned no country to-day has better or more economical roads than the United States, but in the maintenance of them we do nothing. We build a road, then let it go to pieces, and then build it over again. While there is considerable agitation for good roads in this country, there is little organized effort for them yet, although the automobilists are doing a great work in awakening general interest in road improvement. The best roads are in the 'State-aid' States; that is to say, States which have a road maintaining fund, but there still remains much to be done in the way of interesting State legislators in the improvement and maintenance of public highways."

### N. A. A. M. SECURES FREIGHT CONCESSIONS.

Announcement is made by S. A. Miles, general manager of the National Association of Automobile Manufacturers, that its traffic department has again been successful in obtaining concessions of great importance to all the members of the N. A. A. M., the A. L. A. M., and the A. M. C. M. At a meeting of the Southern Classification Committee, held at Cincinnati last week, at which the associations named were represented by Mr. Marvin, manager of the N. A. A. M. traffic department, important changes were made in the Southern Classification. The Southern classification governs rates in the Southern States south of the Ohio and east of the Mississippi Rivers. It also, in certain instances, governs the through rates to points in the South from points in Central Freight Association territory (lying between Buffalo and Chicago), and rates from points east of Buffalo on shipments routed via Southern Dispatch lines.

### AUTOMOBILE ENGINEERS MEET IN JANUARY.

In accordance with its custom the Society of Automobile Engineers will hold its fourth annual meeting in New York City during the course of the shows, and in order that members in New York for the purpose of attending either one of these functions may have an opportunity of being present, a dual date has been decided upon. The first sessions will be held Tuesday, January 5, adjourning to Tuesday, January 19, the first date falling in the week of the show to be held in the Palace under the auspices of the A.M.C.M.A. and the second during the week of the licensed show at the Garden.

In addition to an interesting list of technical papers the annual election for officers will be held, and it is anticipated that there will be an excellent number of the members in attendance. Further details of the places of meeting and the remainder of the program will be made public as soon as decided upon.

## A. L. A. M. ANALYZES THE ENGLISH TIRE TESTS

**C**ONSIDERABLE interest has been aroused by the reports of the tire slippage tests made on the Brooklands track in England by S. F. Edge, and Henry Souther, consulting expert of the Mechanical Branch of the Licensed Association, has made an analysis of the figures as published, which adds to their value. An instrument especially designed for the purpose made it possible to accurately record the number of revolutions of each of the wheels independently and for identically the same period of time, the tests thus giving the turns of each wheel separately.

The chief result determined was that the revolutions of the rear wheels were greater than the revolutions of the front wheels. That is, the driving-wheels would slip. Not content with the mere fact that they slipped, and that the slippage was greater with greater speed, Mr. Souther prepared from the data obtained in those tests a curve, which shows graphically what may be assumed as a fair average.

While the results as published simply indicate the number of revolutions that the rear wheels exceed the front wheels in the particular tests and with that particular machine, the data does

not give the size of the wheels or the size of the tires or the length of the course. Without consideration of the other details that are involved, the results obtained by Mr. Souther's analyses indicate the percentage of tire slips.

From these results we have now added to our knowledge of automobile operation, the fact that on a level racing track of the best sort, with plain round tread tires inflated as is usual for racing, the percentage of slip of the rear wheels is about

0.3	for a speed of 40 miles per hour
0.6	" " 50 "
1.1	" " 60 "
1.8	" " 70 "
3.7	" " 80 "
5.4	" " 90 "

In addition it appears that the driving-wheel on the inside, running around a curved track, slips a very little more than the outer wheel. This is clearly accounted for by the fact that the centrifugal force going around curves reduces the weight on the inner wheel, permitting it to slip more readily than the outer.

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**THE WAY OF THE POLITICIAN.**

There is a State Senator in New Jersey—the automobile law of which commonwealth it should be here remembered finds general disfavor from owners of motor-driven vehicles—and this legislator professes belief in various kinds of reforms, though his "new ideas" do not include any betterment in autoing conditions.

Crediting this supposedly astute politician with wisdom apparently beyond his years, the autoists asked him how they could better their lot and obtain amendments to a law which is unnecessarily severe on owners, injurious to the industry, and sadly detrimental to the State itself. In words that could not be mistaken the reform servant of the people advised the autoists to organize and go into politics. This advice was not disregarded.

And now for the sequel.

Among the candidates for a winter job at the State capital was this Senator, and he, among others, was asked how he stood on such relevant questions as lights at night for all vehicles, an increase in the speed limit for the open country, a tourist privilege in the matter of registration, and a curb on the indiscriminating activities of rural justices. The reform Senator didn't say much for the things which the autoists wanted and to which they thought—and still think—they were entitled.

A circular letter then found its way to the autoists and

their friends in the district which the Senator has quite ably represented in the past. By a margin somewhat meager the reformer missed being a senator again this winter, and the awful charge is made that the autoists contributed in the distressing result.

Alarmed at the power which their stronger-hearted brethren have shown, a few weaklings from the ranks of the autoists are talking of "disciplining" the fighters for what they have accomplished, expressing fear that there will be harmful effects in the legislating that may be done at Trenton. Any such attitude is humiliating, as well as cowardly, and nothing will ever be gained by weak-kneed tactics at this late day. The New Jersey autoists have asked nothing unreasonable—in fact, they have been quite modest in their requests—and it is a thousand times better to be soundly trounced when your cause is a just one rather than to submit tamely to a continuation of injustice, which will be transparent to all in the course of time. The Jersey autoists are on the right track, and if they will firmly and consistently follow out their course as outlined, the final summing up will be substantially acceptable and gratifying.



**INFINITEIMAL LEAKS FOOT UP.**

Were all the water that sweats from the pores of a glacier and tumbles down the steep declivities to land in a tight-bottomed river, the trace of the river on the landscape would be erased and a lake would be there to tell the tale. The lake of broad expanse is but a defeated theory rendered impotent, merely because the river bed lacks homogeneity. The water seeps to lower levels and inefficiency holds sway.

It is so in other walks; in the automobile, for illustration, and to like extent, from the thermal point of view at any rate. Under far more favorable conditions than can be found in the average automobile, full 80 per cent. of the fuel goes to produce carbonic acid and water for the most part.

Likewise in the mechanism losses abound at every point of surface contact. Every squeak and each vibration is at the expense of the motive power. The very tires, that so effectually "swallow" the road inequalities, exact toll for labor performed, and the flywheel, that serves as a saving bank for the energy, exacts a banker's tribute, and a usurer's interest betimes.

Last, but not least, the muffler that cans the noise salts it with energy at the expense of the motor's power, and so it seems the little leaks and the trifling extravagances foot up to a grand total of over 90 per cent. of the thermal value of the fuel. It is the extravagance of nature conspiring with the egotism of man that renders this statement possible, and yet the automobile is a commercial success and pleasurable to contemplate. On the other hand, while practical men busy themselves in pursuits the returns on which are a scanty per cent., there is work to do for the conjurer who can cast a spell on nature and weave a web that will imprison the major portion, or, the share that intelligence should exact.

The cocksure featherweight who prates about establishing standards, hoping thereby to nail progress to a spot on earth no greater than the indentation made by a gnat's heel, wobbles about within the confines of the box called opportunity in a manner befitting the nature of his stunted perception and obtuse ways.

## A. L. A. M. MEETS AND RE-ELECTS CLIFTON TO PRESIDENCY

At its annual meeting for 1908, which was held at the association headquarters, No. 7 East Forty-second street, New York, the board of managers of the Association of Licensed Automobile Manufacturers re-elected Colonel Charles C. Clifton, of the George N. Pierce Company, president for the ensuing year. Thomas Henderson, of the Winton Motor Carriage Company, was chosen vice-president; L. H. Kittredge, Peerless Motor Car Company, secretary, and Colonel George Pope, of the Pope Manufacturing Company, treasurer. The executive committee for the coming year is as follows: Charles Clifton (Pierce), S. T. Davis, Jr. (Locomobile), Thomas Henderson (Winton), G. H. Stilwell (Franklin), and Herbert Lloyd (Electric Vehicle). S. D. Waldon, of the Packard Motor Car Company, was appointed the A. L. A. M. representative on the Good Roads Central Committee.

The routine business of the meeting consisted of the reading of the reports of the various committees, that on the management and which also treated of the present policies and work of the association, being read by E. P. Chalfant, the assistant general manager.

Colonel George Pope, chairman of the show committee, reported that the work of preparing for the ninth annual show to be held in the Garden under the auspices of the association was well advanced and that the show would surpass its predecessors considerably in both size and effect. The show committee also granted an audience to representatives of the Motorcycle Manufacturers' Association to consider the request of the members of the latter for additional space at the Garden.

L. H. Kittredge, chairman of the handbook committee, re-

ported that the sixth edition of the association's annual catalogue, officially known as the A. L. A. M. Handbook, would be issued shortly and contain matters of special interest.

The meeting, which was held Tuesday, November 10, was the largest ever assembled of the board of managers of the association, the following being in attendance: Elmer Apperson, Apperson Bros. Automobile Company; J. S. Clarke, Auto-car Company; W. C. Durant, A. H. Goss, and C. R. Hatheway, Buick Motor Company; W. C. Leland, Cadillac Motor Car Company; Hugh Chalmers, and R. D. Chapin, Calmers-Detroit Motor Company; M. S. Hart, Corbin Motor Vehicle Corporation; Wm. E. Metzger, Everitt-Metzger-Flanders Company; H. W. Nuckles, and Herbert Lloyd, Electric Vehicle Company; J. H. Becker, Elkhorn Manufacturing Company; H. H. Franklin, and G. H. Stilwell, H. H. Franklin Manufacturing Company; E. W. Headington, Hogue Automobile Company; E. R. Hewitt, Hewitt Motor Company; A. N. Mayo, Knox Automobile Company; S. T. Davis, Junior Locomobile Company of America; Samuel Regar, Lozier Motor Company; C. W. Matheson, Matheson Motor Car Company; H. B. Joy, and M. J. Budlong, Packard Motor Car Company; L. H. Kittredge, Peerless Motor Car Company; Charles Clifton, George N. Pierce Company; Colonel George Pope, Pope Manufacturing Company; A. L. Pope, Pope Motor Car Company; G. E. Mitchell, Alden Sampson Manufacturing Company; F. B. Stearns, F. B. Stearns Company; A. H. Ackerman, Studebaker Automobile Company; E. R. Thomas, E. R. Thomas Motor Company; E. S. Church, Waltham Manufacturing Company; Thomas Henderson, Winton Motor Carriage Company.

## MAN UNNAMED WILL SELECT CARS FOR PRESIDENT-ELECT

**W**ASHINGTON, D. C., Nov. 14.—More than passing interest attaches to the official announcement made to-day that after March 4 the automobile will be the official vehicle at the White House. As is well known, President-elect Taft, unlike President Roosevelt, is fond of riding in an automobile, on account of the ease with which it can be made ready and the speed with which it can take him anywhere he pleases to go.

An officer of the War Department, whose name is kept secret until certain plans can be formulated, and who is said to be an authority on automobiles, has been detailed to select two cars for Mr. Taft and his family for delivery after March 4, payment for same to be made from the public treasury. The President-elect has not signified his preference for any particular make of car, and the officer commissioned will inform automobile manufacturers of the general type of car wanted

and they can make bids for furnishing two of them. The competition promises to be very lively, as this is the first time on record that an automobile will be used by a President of the United States, to the exclusion of the horse-drawn vehicles used by all his predecessors, and it will not only give the manufacturer who is lucky enough to be chosen considerable prestige, but will likewise give a big boost to the automobile industry.

While President Roosevelt has occasionally used automobiles, particularly during the summer seasons spent at Oyster Bay, he has consistently refrained from purchasing one for the White House stables. To-day, in company with Mrs. Roosevelt, he made a trip in a White steamer belonging to the War Department to Alexandria, Va., to witness some school games in which his youngest son competed.

## FRENCH MAKERS ASKING IF SALON IS NECESSARY

**P**ARIS, Nov. 12.—After holding an automobile show for 11 successive years, and making it the most attractive of all the public exhibitions held in France, constructors are beginning to ask themselves if after all it is worth while. At the present moment a circular is going through trade circles against the holding of any show in 1909. Those having signed it comprise a large proportion of the leading firms—firms producing more than 100 cars per year. The curious feature of the anti-show move is that the firms popularly supposed to be at the head of it refuse to acknowledge any connection with the circular, and even those having signed, when questioned on the matter, assume a complete ignorance that is mystifying.

There appears to be a certain objection to continuing the

show on the ground that it is too costly, and that the automobile industry has now settled down to the same position as any other trade, and has no need of special demonstrations. Few, however, are willing to state these views openly. "If the other firms do not want a show, we can very well do without it," is the general view. In official quarters the possibility of the eleventh show being the last is laughed at. "If the Salon were stopped money grabbers would step in and hold small exhibitions at which dealers would exhibit, if the factories would not. The individual cost of the Salon is so low that to abandon it would be folly." Meanwhile exhibitors are looking at the electric light, decoration, and wage bills, and wondering if it is worth while to go to all the trouble and expense.

**DETROIT WILL HAVE TWO SHOWS.**

DETROIT, Nov. 16.—Whether Detroit can support two automobile shows a year is to be given a practical demonstration this Winter, according to present plans. Last Winter the Detroit Automobile Dealers' Association decided to branch out for itself, and hold a show in which the score or more of retailers both be given a voice in the management and a share in the dividends. They got both. It was freely predicted at the time that this foreshadowed the passing of the Tri-State Automobile & Sportsmen's Association, which had given six shows up to that time, being one of the pioneers. The association followed later with a show that left the promoters in a happy frame of mind.

Now the Detroit Automobile Dealers' Association is preparing to repeat last year's success, the show which will follow the one in Chicago to be given at the Wayne pavilion. The Tri-State Automobile Dealers' Association, far from being a dead one, has engaged Light Guard Armory for the last week in January, following the New York shows and preceding the one at Chicago, and will endeavor to show the Dealers' Association what a real automobile show is like. Manager McMasters is busy with the details for the Tri-State show, and expresses himself as well pleased with the outlook.

**BRITISH SHOW OPENS THE SEASON.**

LONDON, Nov. 13.—The seventh annual exhibition of the Society of Motor Manufacturers & Traders has opened its doors. As far as can be judged from present indication, the most interesting class will be that of the small four-cylinder car, in which the British maker has for some years been specializing. The trend of late has been in the direction of greater economy of maintenance, and the small car promises overmuch in this direction.

One of the special features will be the new "Silent Daimler" car, built under the patents of Knight, late of Chicago. Cars of similar type will be staged by the Minerva Company, who hold the Belgian license, and by the Panhard firm, but the production of the Mercedes concern, which is officially stated to have acquired the German rights, will not be ready till the date of the Paris show.

The exhibition of racing cars was expressly forbidden, and a second innovation, more indicative of common sense than the first, is the barring of all siren noise and horn blowing.

The show will remain open till Saturday, November 21.

**PHILADELPHIA'S SHOW, JAN. 27 TO FEB. 3.**

PHILADELPHIA, Nov. 16.—Necessity for a larger floor space than that afforded by the First Regiment Armory will necessitate the holding of next January's automobile show uptown, in the Second Regiment Armory, Broad and Susquehanna avenue. The change in location necessitates a change of date also, the Second's armory being engaged for the early part of the week originally decided upon by the show committee. The announcement was, therefore, made last week that the show would open on Wednesday, January 27, and continue till February 3, inclusive. J. H. Beck, whose work at several former shows made their success possible, has been secured as manager. He has opened offices at Room 216, Odd Fellows' Building, Broad and Cherry streets, in the heart of the automobile district.

**CLEVELAND TRADE TO RUN ITS OWN SHOW.**

CLEVELAND, Nov. 16.—At the annual meeting of the Cleveland Automobile Dealers' Company, held last Friday evening at the Cleveland Automobile Club, a show committee was authorized by the organization to conduct the next Cleveland automobile show. This is quite a departure from the method followed in former years, which has been that of engaging a manager. This committee consists of Hobart M. Adams, Clarence M. Brockway, and W. D. Price, who will have in charge the entire detail and the entire management of the 1909 Cleveland automobile show, to be held February 15 to 20, inclusive.



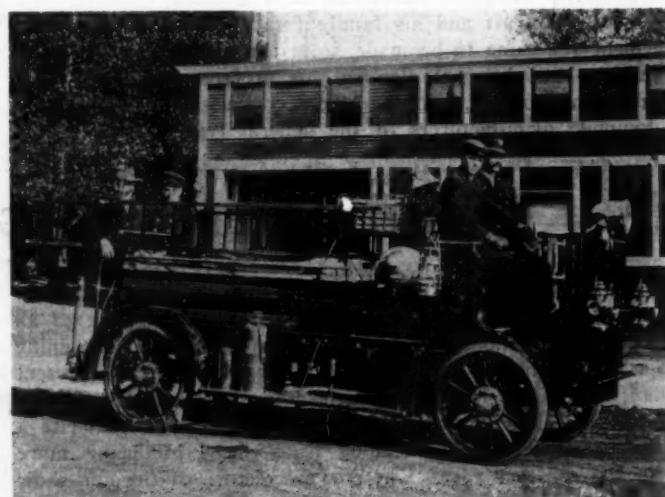
Brennan Construction, Harrall 1,200 Pounds Commercial Car.

**THE HARRALL COMMERCIAL CARS**

The Brennan Manufacturing Company, of Syracuse, N. Y., has recently completed a commercial car of 1,200 pounds capacity for the Harrall Buggy Company, of South Boston, Va., the details of which are of more than passing merit.

Take the chassis into account. A channel section steel  $3 \times 3\frac{1}{2}$  inches of depth and flange, respectively. The width is 42 inches and the platform length is 118 inches. Allowing for the machinery and the driver's seat, the platform area is  $42 \times 72$  inches. The chassis is suspended on semi-elliptical springs, perched on  $1\frac{1}{2}$  inches square front and rear axles. The front wheels are 39 inches in diameter, fitted with  $3\frac{1}{2}$ -inch twin solid rubber tire. The rear wheels are 43 inches in diameter, fitted with  $3\frac{3}{4}$ -inch twin solid rubber tires. The steering gear is irreversible, of substantial design and accurate construction, and the linkages are straight line with liberal bearings, provided with means for oiling.

Model 7 has a power plant, two-cylinder opposed, 5 inches bore and stroke, respectively, water cooled, and rated by the makers at 16 to 18 horsepower. The motor connects with a planetary transmission, thence to a jackshaft and side chain drive. As usual with planetary gears, the high speed is direct drive and one low speed is provided in addition to the reverse. The ignition is by means of jump spark and suitable battery.



Rapid Combination Chemical Fire Fighter.

Hutchinson, Kan., has succumbed to the march of progress and has adopted the combination chemical car manufactured by the Rapid Motor Vehicle Company, of Pontiac, Mich. The chief of the Hutchinson fire department has rendered a very favorable report on the new machine.

## LATE FALL ACTIVITIES OF THE AUTO CLUBS

### "TRAPPING" RECEIVES SEVERE BODY BLOW.

PHILADELPHIA, Nov. 16.—A Philadelphian, with the able assistance of Barrister Edwin S. Nyce, ex-secretary of the Norristown Automobile Club, dealt a blow at the "trap" habit last week, from which it cannot recover for many moons, if at all. Automobilists generally have long but vainly insisted that the mere fact of a numbered tag being attached to a car which had exceeded the speed limit, did not necessarily imply that the owner was in the machine at the time. Magistrates throughout the State have taken it for granted, and have "soaked" the buyer of the tag accordingly. This question came up in the case of Charles W. Bacon, a Quaker City real estate operator, whose car was "piped off" by a trapper, and who was later ordered to appear and pony up.

But Bacon is a scrapper, and so is Nyce, whom he retained to fight the case, which came up in the Montgomery county court last week. Judge Weand was on the bench. His Honor, after hearing the facts, threw a bombshell into the trappers' ranks by handing down an opinion in which he sets forth that there was nothing in the pleadings to connect the defendant with the automobile in question, or with the act of violating the law, nor did it appear that the defendant was the owner of the car or was in it at the time. To sustain the conviction, it would be necessary to hold, without evidence, that the defendant was the owner of the machine and the occupant of it at the time. The proceedings are otherwise irregular, concludes Judge Weand, "in that the justice, after fining the defendant, required him to give bail for his appearance."

Henceforth, unless the Lower Providence township justice carries the case higher—which he will hardly do, in face of the rebuke administered to him by Judge Weand for collaring a fine and then compelling his victim to furnish bail—it will be impossible for every Thomas, Richard, and Henry who holds a justice's commission to issue summonses right and left after every clear Sunday, on the mere say-so of a trap artist who benefits financially in proportion to the number of victims he can corral. It does look as if it would be a lean Christmas up Lower Providence way.

### MARYLANDERS WILL HAVE THEIR FIRST CLIMB.

BALTIMORE, Md., Nov. 16.—For the first time in its history the Automobile Club of Maryland, November 21, will conduct a hill climb. The contest will be under the rules and sanction of the A. A. A. racing board. The events have been divided as follows:

- Class A—Cars selling for \$850 and under.
- Class B—Cars selling for \$851 to \$1,250.
- Class C—Cars selling for \$1,251 to \$2,000.
- Class D—Cars selling for \$2,001 to \$3,000.
- Class E—Cars selling for \$3,001 to \$4,000.
- Class F—Cars selling for \$4,001 and over.
- Class G—Cars driven by amateur drivers only, \$3,000 and under.
- Class H—Cars driven by amateur drivers only, \$3,001 and over.
- Class K—Free-for-all.

Owners who drive their cars for pleasure are the only ones eligible to participate in Classes G and H. The start in each of the events will be a flying one. The climb will be held on the Belvedere avenue hill, from Falls road to Roland avenue. A special electric timing apparatus will be used.

The club has decided to send circular letters to all car owners in Maryland enlisting them in the fight against the proposed special tax which Governor Crothers and the Maryland Automobile Commission desire to impose on autoists. The letters will also urge these owners to become members of the club.

The club members have gone on record as opposed to long tours. This action on their part was brought about by the reading of the report of the touring committee. The majority of the members are in favor of runs with time for a good dinner.

### COL. JOYCE BOOMS MINNESOTA ASSOCIATION.

MINNEAPOLIS, Nov. 16.—No organization in the entire A. A. A. fold is making greater or more rapid strides in membership than the Minneapolis State Automobile Association. To Col. Frank M. Joyce, president of the association, is due a major part of the credit. Thanks to his hustling recruiting methods thirteen new clubs have been organized with a total membership of 1,800. Col. Joyce is confident that by the first of the year he will have raised the total to twenty clubs.

Under the inspiration of Col. Joyce's success in the State at large, the members of the Minneapolis Club are making strenuous endeavors to increase the club's membership during the winter months, so that by the opening of the touring season it will reach the 1,500 mark.

Local autoists are much interested in the new bill which is being framed for presentation at the next session of the Legislature. This bill will provide for State registration handled through one set of officials, so that it will be possible to obtain positive identification of any car in the State. It is also planned to have owners pay a State license tax, in lieu of a personal tax on their machines. This license tax would be figured on the horsepower of size and weight of the car. It is proposed to use the money derived in this way in good roads work, it being the idea of those framing the bill that such an act would meet with strong approval among the farmers and their representatives in the Legislature. It will be provided in the bill that no registration numbers shall be issued until the State license tax has been paid, and this will mean that 100 per cent. of the owners of automobiles will contribute to the funds of the State. As it is now it is said that of 5,000 machines in the State, about 1,500 are being paid for in the personal taxes of their owners.

Another provision of the bill will be copied from the Connecticut law, which provides, in the section applying to the rate of speed, that automobiles "shall at all times be driven at a reasonable rate of speed."

Other sections will specifically define the rights of automobiles as regards other vehicles and the rights of other vehicles as regards automobiles. The recent elections have changed the complexion of the Legislature somewhat, and the auto club members are confident that their bill will stand a very good chance of being passed.

### RECENT WORK OF COLUMBUS AUTOMOBILE CLUB.

COLUMBUS, O., Nov. 16.—The members of the Columbus Automobile Club feel that since the club was organized last Summer they have already proven the good work which can be accomplished by a live club. During the few months of the club's existence the members have succeeded in bringing about one change in the city, that of traffic regulation, which they correctly think is not only of great importance in adding to the ease with which all traffic can now move, but of far more importance is the increased safety to all and especially pedestrians. Heretofore Columbus had no rules at all governing traffic, all vehicles wandering up and down the streets wherever they wished and on either side, so that the pedestrian was in constant danger, as he had no idea which way to look for passing vehicles. The automobile club took the initiative in applying to the city council for traffic ruling and with the help of the Columbus Vehicle Owners' Association carried it through successfully. When the new ordinance went into effect the club backed up its previous work by paying for special officers to assist the regulars for the first few days in the more crowded sections of the city.

In regard to the work usually taken up by automobile clubs the capital city enthusiasts have not been negligent. The committee on road signs has not been idle, and although it has not erected any signs so far, a report was turned in at the last meeting

containing recommendations as to the style, cost and number of signs to be placed. The work will be well organized and everything made ready during the Winter in order that the work may be started early in the Spring. In the matter of a club home rooms have been secured in the Northern Hotel, which are being remodeled preparatory to the club taking possession December 1.

#### WHAT PHILADELPHIA CLUBS ARE DOING.

PHILADELPHIA, Nov. 16.—The local automobile organizations are showing no evidences of winter torpidity. The Quaker City Motor Club will inaugurate its winter social season Wednesday night, December 2, with a banquet at the Hotel Walton. This function will be the first of the kind in the club's history, its activities being hitherto more along sporting lines. A score or more of celebrities, including Governor Stuart and Mayor Reyburn, besides other State and municipal dignitaries and the high lights of automobiledom, will be present as guests.

The Automobile Club of Philadelphia has appropriated money to revise the map tentatively issued last year and to issue four additional maps by March 1 next. These maps will cover territory as far east as the Delaware river, as far north as Easton, as far west as Lancaster, and south to within six miles of Wilmington, Del. Macadam roads, stone roads fit for spring traffic, and dirt roads will all be plainly indicated. The committee in charge of this work is also engaged in the completion of maps of the Water Gap region and the country beyond Lancaster. New radiator emblems, incorporating the A. A. A. insignia and the words "Pennsylvania Motor Federation" and "Philadelphia" are being delivered to members.

#### PLANS FOR ROAD IMPROVEMENT IN VIRGINIA.

NORFOLK, VA., Nov. 16.—At last the work of the Tidewater Automobile Association in its campaign for better roads seems to be bearing some fruit. The task of building a macadam road from Norfolk to Richmond has been actually started by the engineers on the Richmond end, who are preparing plans for a new road between that city and Petersburg. St. Julian Wilson, State highway commissioner, who has become much interested in the work which the automobile association has been striving to accomplish, has notified the Norfolk promoters of the plans at the Richmond end and recommended that they, with the aid of the Suffolk automobilists, direct their energy toward this end of the route. Work has already started with renewed vim to get the county and State authorities in this section interested in order that this half of the route shall not be the last completed.

#### TO EXTEND SHENANDOAH VALLEY PIKE.

WASHINGTON, D. C., Nov. 14.—Members of the Automobile Club of Washington, as well as automobilists throughout this section, are greatly interested in a movement that has been started to extend the famous Shenandoah Valley pike from Staunton to Richmond, Va. The project has the indorsement of financiers in all the cities and towns between Winchester and Richmond. From Hagerstown, Md., through Martinsburg, W. Va., Winchester, Strasburg, Woodstock, Harrisonburg, and to Staunton, Va., there is a fine turnpike 140 miles long, and with an extension to Richmond, it will be a highway about 225 miles in length, without a break. The Shenandoah Valley is the finest touring ground in this section.

#### WORCESTER CLUB TO HOLD ENDURANCE RUN.

WORCESTER, MASS., Nov. 16.—The Worcester Automobile Club completed arrangements for holding a 200-mile endurance and reliability contest on Tuesday, December 8. According to the rules of the contest the route will not be known to the drivers until the start of the run, which will not only require all bonnets to be sealed, but gasoline consumption will be taken into account when the final reckoning comes. It is planned to start from the clubhouse at daylight and check in at the starting point every two hours. The interest shown by the local dealers and owners has assured the club of success.

#### MOTOR FEDERATION UNDERTAKES CAMPAIGN.

PHILADELPHIA, Nov. 17.—With the purpose in view of having a good roads bill introduced in the Pennsylvania legislature at its coming session, the Pennsylvania Motor Federation is undertaking an active campaign of education on the subject of good roads. The first tangible result of this is to be seen in Governor Stuart's open support of a \$60,000,000 highway to connect Philadelphia and Pittsburgh, as published in to-day's papers. This is due, somewhat, to influence brought to bear by the Federation, which has succeeded in having a request made for an appropriation of this amount.

In connection with the announcement of the governor's stand in the matter, the Good Roads Committee of the Federation is to-day mailing 14,000 circulars to the supervisors and mayors of thirty cities, the burgesses of 1,000 boroughs, and to 1,500 secretaries of town boards, thus including every supervisor in the State.

The Federation is working in the interests of a bill to secure a \$50,000,000 appropriation for good roads, but owing to the necessity of obtaining a constitutional amendment, this cannot be put through until 1912. In the meantime, the Federation is asking for an annual appropriation of \$5,000,000 until 1912, and there seems to be every prospect of obtaining it.

#### MILWAUKEE CLUB TO BUILD HOME FOR ITSELF.

MILWAUKEE, Wis., Nov. 16.—The membership of the Milwaukee Automobile Club has become so large that the board of directors has been increased from nine to fifteen members. The six new directors are: George C. Forgeot, Alfred Kieckhaefer, one year; George A. West and Oscar F. Fischedick, two years; M. C. Moore and O. Z. Bartlett, three years. The committee appointed to have charge of the matter of building a clubhouse consists of Clarke S. Drake, George A. West, C. W. Norris, Lee A. Dearholt and M. C. Moore. Sites are now being inspected. A campaign has been started for new members to insure a broad response when the actual work on the new clubhouse is begun.

A delegation of officials of the Milwaukee Automobile Club made a 200-mile tour to Monroe, Wis., November 14, as guests of W. L. Hibbard, agent for the Chalmers-Detroit, and instituted the Green County Automobile Club into the Wisconsin State A. A. The Green County Club has a membership of sixty.

#### HARTFORD CLUB WILL GO AFTER OFFENDERS.

HARTFORD, CONN., Nov. 16.—That the Automobile Club of Hartford is determined to force observance of the provisions of the present law is evident from the action just taken by the club attorneys. Several prominent members have been notified to appear before the board of governors, Wednesday evening of this week. The law-breakers will be given a hearing, and in two or three instances application will probably be made to the Secretary of State for the revocation of license. As matters now stand several daily newspapers in the State have taken a decided stand against autoists, and are clamoring for the repeal of the present law. Hence it is up to someone to do a little missionary work, and the local club intends to do its share. Various other clubs in the Connecticut Automobile Association will have the disturbing element on the carpet.

#### CHICAGO A. C. HAS AN EXCITING ELECTION.

CHICAGO, Nov. 14.—The annual election of the Chicago Automobile Club was fiercely contested, there being three tickets in the field, the third and last one, the opposition, sweeping everything before it, electing every one of its men. The results eliminated from the board of managers such well-known auto lights as Sidney S. Gorham, Burley B. Ayers and Charles E. Gregory. The new list of officials is as follows: President, Ira M. Cobe, re-elected; first vice-president, T. J. Koehler, re-elected; second vice-president, T. J. Hyman, re-elected; secretary, C. A. McDonald; treasurer, George S. Whyte; directors, Joseph F. Gunther, re-elected; John Farson, re-elected; Claude Seymour, re-elected; Ban B. Johnson, Allan S. Ray and F. W. Blocki.



**Benjamin Briscoe, President of Maxwell-Briscoe Motor Company:** "The bugaboo of threatening overproduction in the automobile industry is nothing new. The same cry was raised when the industry was just beginning to see its own great possibilities. It will require years to satisfy the requirements of the home markets. When that has been done—and we are a long way from it—there is the foreign market and then the commercial vehicle, which will keep us busy for a long time to come. The Maxwell factories alone will market nearly 10,000 motor vehicles of all kinds during 1909. That doesn't look as though we were afraid of overproduction."

When Mr. Briscoe made this statement he had just returned from California, whither he had gone to conduct negotiations for the erection of the fourth Maxwell-Briscoe factory.

**C. L. Fleming, Manager of Union Carriage Company, St. Louis, Mo.:** "Although not as yet established in its automobile plant, the Union Carriage Company is already figuring on a further addition. This will be necessary, as we have decided to increase our output to 1,000 complete cars for 1909. Before election we were undecided and to be on the safe side announced 500 as the number of cars which we would put on the market. But since election conditions have changed, and many inquiries are being received daily. Some days the number reaches 80, and all are good prospects. Last week we received orders for 12 more of our motor storm buggies."

**Alexander Winton, President Winton Motor Carriage Company:** "We have given the 'sixty' a most exhaustive series of tests and our every expectation has been realized. This, however, is only natural, for the 'sixty' is free from experimental features, representing elements that had already proved their worth in smaller power. The 'sixty' is produced to meet the demand for high power and large carrying capacity and is in every respect a car on which six-cylinder enthusiasts may place their faith without risk of disappointment." It is further stated that deliveries of the new \$4,500 Winton "Six" will begin at once. This car has six 5 by 5 off-set cylinders, rated at 60 horsepower, carries a seven-passenger body and is equipped with a four-speed transmission, direct drive being on third speed.

**William Mitchell Lewis, President of the Mitchell Motor Car Company:** "In 1904 we were the \$1,500 car pioneers, and built 315 automobiles of this model. The first car was sold to Horatio W. Hall, our Chicago agent, and is still in active service, as are 300 other machines of the 1904 output. Showing how accurately the Mitchell Company anticipated the requirements of the public, it is only necessary to add that the 1904 pioneer car was a four-cylinder 4 by 4 engine. This practically is the average of the present popular medium-priced car. The present 1909 model Mitchell—the entire output of about \$3,000,000 worth of these cars has been assimilated by Mitchell agents—has a 4 1-4 by 4 1-2 engine, a wheelbase 3 inches longer, magneto ignition, selective transmission and refinements that the wisdom of Designer John W. Bate has suggested. The new 1909 \$1,500 cars are capable of a speed of 55 miles an hour."

#### FOUR 1909 HERRESHOFF MODELS.

DETROIT, Nov. 16.—More than passing interest attaches to the filing of articles of incorporation at Lansing of the Herreshoff Motor Company, aside from the added impetus given the automobile industry in this city. Charles F. Herreshoff, famous as the designer of fast boats, and of late years consulting engineer for some of the largest automobile plants in America and Europe, has decided to make Detroit his future home, and is giving his personal attention to every detail of the new car which will be placed on the market, and which will be named after the designer. The claim made for the Herreshoff motor is its extreme refinement of construction and simplicity of design, the weight of the motor being reduced fully 40 per cent. without impairing its strength, thus permitting some radical changes and improvements in the construction of automobiles.

Although the creator of some of the fastest speed boats known, Mr. Herreshoff has always regarded this work as a side issue, his greatest fame being gained as a designer of auto frames, axles and transmissions, and as consulting engineer. The Herreshoff Motor Company has taken over a large plant here, and already has 500 men engaged on the 1,000 cars it will produce this season, and of which there will be four models.

#### BOSTON TRADE VERY OPTIMISTIC.

BOSTON, Nov. 14.—Boston's automobile trade is enthusiastic over the present condition of the trade and the future prospects. Not only in this city, but all over New England there is apparent a remarkable optimism concerning motor vehicles, and agents in the smaller cities are sending in larger orders than ever before, and seem to be confident of their ability to dispose of the machines as rapidly as they can be shipped to them from the factories. Locally there is hardly a dealer who is not much further ahead on orders than ever before at this season, and some of them have already begun to fear that they will have an experience similar to that of two years ago, when their allotments ran out before their customers were satisfied.

Present conditions amount almost to a boom, for the demand is not limited to any one class of car, but is felt by all classes, low, medium, and high priced. The immediate demand is for enclosed cars, and some dealers claim that they cannot obtain enclosed bodies rapidly enough. But there is always a very strong demand for open cars to be delivered in the Spring, and one dealer in high class cars shows figures to substantiate his statement that he has taken four times as many specifications up to date as he had taken a year ago at this time.

#### LACROIX AND BREYER ARE ON LA PROVENCE.

PARIS, Nov. 12.—Paul Lacroix, American selling agent of the Renault Frères, recently arrived from New York on the *Provence* and will stay in Paris not more than one week, probably sailing again on the same boat, leaving Havre the 14th, in order to be present at the Savannah race on Thanksgiving Day. The hurried European trip has been made solely for the purpose of arranging details for next season's business.

Another automobile passenger on the *Provence* on her next outward trip will be Victor Breyer, European representative of the American Automobile Association, who is making his annual trip to the States, and who will attend the Savannah race.

#### RAINIER FACTORY TO BE KEPT RUNNING.

SAGINAW, MICH., Nov. 13.—That the Rainier automobile works located here, which recently went into the hands of a receiver, will be kept in operation has just been announced by Jesse Walton, of New York City, the receiver, after a conference with the local management. It is not yet known just what form the reorganization of the business will take, but local capitalists are sufficiently interested in the business to keep it going at its present location. The company has a valuable site of 25 acres on the river front, with a modern brick plant.

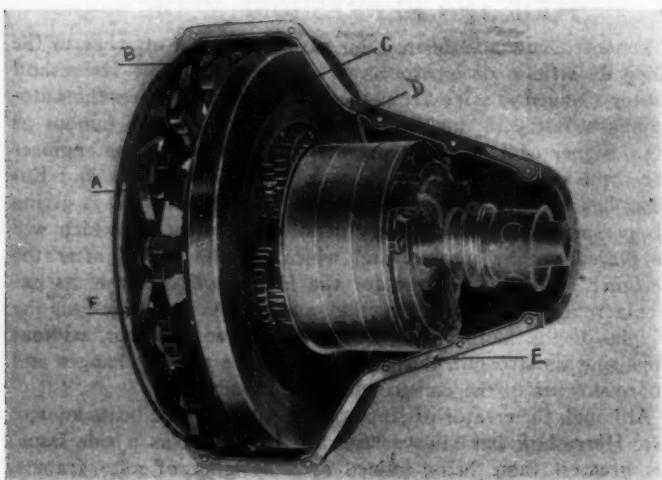


Fig. 1—Showing the complete assembly, with flywheel.

#### THE NEW FORD IGNITION SYSTEM.

The Ford Motor Company, of Detroit, has burned its bridges in so far as batteries, wiring coils, etc., are concerned, in that a magneto is built into the flywheel, and in itself constitutes the whole ignition equipment.

Fig. 1 shows the assembly complete, in which the letters denote: *a* = one of the magnets; *b* = one of the armature coils; *c* = flywheel on which magnets are mounted; *d* = planetary gear set; *e* = lower half of case; *f* = spider, holding the coils in rigid relation to the frame.

The spider holding the coils is shown in Fig. 2, while Fig. 3 shows the magneto on one face of the flywheel.

The Ford Company sets forth a manifold of claims for this system, and points out that the ignition is concentrated to but one point, instead of having its component parts spread out.

The functions of the "Ford" magneto are not unlike the similar functions of magnetos in general, excepting that the

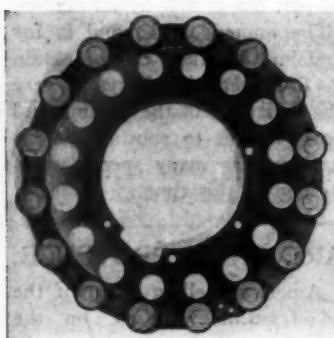


Fig. 2—Coil Spider, complete.

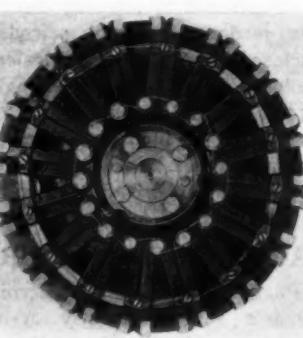


Fig. 3—Magnets on the flywheel.

"Ford" idea demands the use of multipolar magnets. In the operation of this system as applied to the Ford model "T" automobile for 1909, the permanent magnets, fixed on the flywheel, are caused to rotate past the coils, thus building up a "magnetic flux" in the circuit. This flux pulsates, and in doing so induces electrical potentials in the coils. For the rest, it is a matter of convenient timing and the windings of the coils as will induce a sufficiently high electromotive force in the secondary electrical circuit.

There are sixteen coils and an equal number of permanent magnets. The coils are of copper wire, suitably insulated, and one end of each is to "ground." The work in general is common to that which obtains in the construction of all electrical generators on a high plane.

The Ford system does not preclude the use of a battery auxiliary, but the need of the same is eliminated, besides concentrating the ignition system in such a way as to facilitate manipulation.

#### STUDEBAKER CUP FOR THE A. A. A. TOUR.

SOUTH BEND, IND., Nov. 16.—Col. George Studebaker has decided to offer a trophy to be known as the Studebaker Gold Cup, to be contested for at the same time as the Glidden and Hower trophies, during the A. A. A. annual tour. The cup is valued at \$5,000. Colonel Studebaker believes that the automobile has reached a stage of development where something more than the present rules of the Glidden contest must be required to prove efficiency, and although he imposes no specific conditions, he makes the donation with the suggestion that all devices known to the contest committee shall be utilized to guard against repairs and replacements.

#### A DUST-PROOF UNIVERSAL JOINT.

The Hartford Auto Parts Company, Hartford, Conn., will entertain the trade during 1909, in a most acceptable manner through the good office of its "Type C" dust-proof Universal joint, and the self-lubricating feature of the same should gain for it admittance to the elect.

Recognizing the potency of the crystallized fact that in any structure no link is stronger than the weakest, the "Type C"

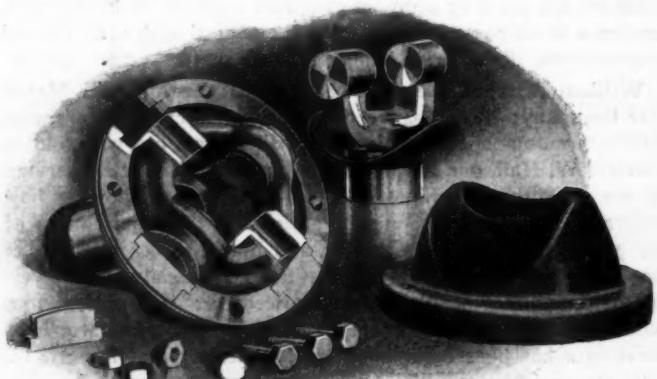


Exterior View of the "Type C" Assembled Joint.

joint is designed, according to the makers, to sustain under all torsion that can emanate from a crankshaft of the finest grade whose diameter will equal the diameter of the hole in any one size made of the "Type C" universal joint.

The ball and socket feature is adequately shown in the illustration, but to conclude without quoting the makers on the question of accessibility would be to do the subject scant justice: "As simple and accessible as the most critical could demand. Without tools the joint can be taken apart in a few seconds and the matter of assembling the entire drive equipment on a car should not demand over ten minutes of a workman's time."

The J. S. Bretz Company, Times building, New York City, is the authorized vendor.



"Type C" Joint Disassembled, Showing the Parts.

## INTERESTING NEWS IN GENERAL

**Edition De Luxe of Rambler Magazine.**—An attempt at something a bit above the ordinary in house journalism is in evidence from Thomas B. Jeffery & Co., makers of the Rambler automobiles. A special edition of the *Rambler Magazine*, printed in two colors and packed from cover to cover with snappy illustrations and instructive views showing the best method of building and selling automobiles, is now being mailed to dealers throughout the country. The book contains a picture of the Rambler factory, claimed to be the largest automobile plant in the world; a portrait of Thomas B. Jeffery, who made its great success possible; the announcement of the new Rambler models; the details and exposition of all the special Rambler features, including the new Rambler spare wheel; a profusely illustrated story of the methods of making and testing of Ramblers; and a story of the sales organization and the great record made by this concern during the past eight years. This magazine much resembles a standard publication.

**Difficulties of Touring the South.**—J. H. Smith has just returned to his home in Atlanta, Ga., with some interesting tales of the experiences he encountered while on a 2,000-mile tour among the mountains of Georgia and North and South Carolina in a Pope-Hartford touring car. One day while trying to reach Greer, S. C., through mud and rain, he was obliged to dig a path around a deep mud hole in the Tugaloo river bottoms. Having no shovel in his tool equipment, he was compelled to make the best of a tire iron, which naturally made very slow work. A few days after reaching Spartansburg a street car butted into his machine and smashed the lamps, fenders, radiator and almost everything else that would bend on the front of the car. After awakening the motor sufficiently to back off his car, Mr. Smith loaded his machine with the broken parts and drove to a repair shop, where he rigged up a radiator out of a tin box which did duty for the rest of the trip.

**Twenty-six European Makers Use Hele-Shaw Clutches.**—This clutch, exploited in this country by the Merchants & Evans Company, Philadelphia, is now used by some twenty-six separate European automobile makers in their 1909 products. This clutch, it will be remembered, is of the multiple disc type, differing from other multiple disc clutches in that the discs do not bear on their flat faces, but have conical grooves that engage on their faces. The members are submerged in oil, but the action is such that the engagement is attended with much certainty, and without evidence of "fierceness." For a given motor, the clutch ability is said to be attended with but little pedal pressure. The actual contact surface is a maximum, while the effectiveness is multiplied through the angularity of the engaging faces.

**To Sell Remy Magnets.**—Automobile trips have been undertaken for all kinds of things, and that now being run by A. T. Mosher and Harry Harter in the interests of the Remy Electric Company, Anderson, Ind., adds a new phase. They are making a run of several thousand miles, which will take them from Anderson, Ind., to Savannah, Ga., to New Orleans, Galveston, Tex., St. Louis and back to Anderson, for the purpose of demonstrating and selling the new Remy high-tension magneto. This is of the in-

ductor type and is extremely simple and effective, as there are no moving wires or connections in the primary circuit.

**Goodyear's California Performances.**—The W. D. Newer Rubber Company, of Los Angeles, Goodyear tire agents for the Pacific coast, have been particularly energetic in equipping competing cars in various events. According to the Newer Company, the Goodyear tire now holds the San Francisco-Los Angeles record, on a White steamer; the San Francisco-Los Angeles and return record, the San Francisco-Portland record, Los Angeles-San Diego record, on a KisselKar, and also Los Angeles-Newhall, and the Los Angeles-Victorville records. Forty-one out of forty-seven firsts is claimed for track events with a tourist car.

**Annual Meeting of the A. S. M. E.**—The twenty-ninth annual meeting of the Society will be held in the Engineering Societies building, 29 West Thirty-ninth street, New York, December 1 to 4. The notice says: "The professional and social opportunities afforded by these meetings are being realized by the members, as is shown by the constantly increasing attendance. Five years ago at the annual meeting there were 474 members and guests present; last year, notwithstanding the general unsettled financial conditions, there were 1,232 in attendance, which shows an increase in the past five years in round numbers of 750."

**Earl Now Known as Petrel.**—The defunct Earl Motor Car Company, of Kenosha, Wis., manufacturers of the Earl friction drive cars, has been reorganized under the name of the Petrel Motor Car Company, and its product will be named the "Petrel." Samuel W. Watkins, founder of the Beaver Manufacturing Company, Milwaukee, builders of engines and motors, is at the head of the new company. The Petrel company will occupy the former Visible typewriter plant at Kenosha, the Earl's old home.

**Willard Company Has New York Depot.**—The Willard Storage Battery Company, of Cleveland, O., has opened an office and battery depot at 1876 Broadway, corner of Sixty-second street, New York City, where it will take care of its battery business for the metropolitan district. The depot will be fully equipped with apparatus for assembling, charging and crating batteries ready for use. The depot will also take care of the charging of vehicle batteries and batteries for sparking, lighting and other purposes.

**No Advertising for Palace Show Program.**—An announcement from the American Motor Car Manufacturers' Association contains the information that the Palace Show program will contain no advertising. They will be distributed free, with a full list of names and business of each exhibitor. The show committee is of the opinion that the tone of the show is kept higher by keeping out the advertising and distributing without cost.

**Three Tire Replacements in a 24-Hour Race.**—A remarkable tire record is claimed in the 24-hour race at Los Angeles, Cal., when the winning Locomobile completed the around-the-clock contest with only three replacements of its Fisk bolted-on tires. That is to say, the car used only seven tires for the entire race, and in these events tires are generally "burned up" by the dozen.

**Two Indiana Companies Consolidate.**—The Stanley Automobile Manufacturing Company, of Mooreland, Ind., has consolidated with the Troy Buggy Works Company, of Troy, Ind., and has moved its entire plant to that place. With the increased facilities the company will continue to manufacture the Stanley automobiles in the name of the latter company.

**Archbishop Joins the Automobilists.**—One of the latest converts to the use of the automobile is Archbishop O'Connell, of Boston. A 40-horsepower Pierce Arrow landauet has been presented to him by the laity of the city of Boston. The committee which was appointed to examine a number of cars chose the Pierce Arrow as being what they desired for a present to the Archbishop.

**Champion Will Make Magnets.**—At Flint, Mich., the Champion Ignition Company has been organized, with Albert Champion, of Boston, at the head, to manufacture magneto.

## IN AND ABOUT THE AGENCIES.

**"Alco," Northwest.**—The American Locomotive Company's "Alco" will be handled in the Northwest for the first time by the Victoria Motor Car Company, of Minneapolis, Minn., a new company composed of Charles H. Robinson, Arthur W. Armatage and Robert H. Rose. The territory given the new company extends to the coast, and elaborate arrangements are being made to handle the business in a satisfactory manner and to make a record the first year. This company has commodious quarters at 1312 Hennepin avenue, where over 7,000 feet of floor space will be devoted to the "Alco" line, garage and repair departments.

**Overland, Wichita, Kan.**—The Star Automobile Company has been formed in Wichita, Kan., by a number of men interested in the automobile industry and the agency for the Overland car has been arranged for. The company will erect a two-story building designed especially for sales rooms and garage purposes. The incorporators include Hugh E. Roberts, E. N. McGregor and A. C. Houston.

**New Goodrich Tire Branches.**—The B. F. Goodrich Company, of Akron, Ohio, has established branches in the following cities: Kansas City, Mo., 1728 Grand avenue, manager, Fritz Oberhue; Minneapolis, 827 Hennepin avenue, manager, E. W. McCreery; Pittsburg, 5900 Penn avenue, manager, H. L. Bouker; Atlanta, Ga., 64 North Pryor street, manager, E. V. Wilkinson.

**Rauch & Lang Company, Ohio and Indiana.**—The Rauch & Lang Carriage Company, makers of R. & L. electrics, announce that E. W. Livensparger, of Cleveland, has been appointed district agent for Ohio and Indiana, where he will establish all agencies. Branches have already been arranged for at Lima and Canton, Ohio, and at Fort Wayne, Ind.

**Middleby, Philadelphia.**—William P. David, long connected with the Maxwell agency in Philadelphia, is at the head of the Standard Motor Company, 616-618 North Broad street, which has just been awarded the local agency for the Middleby car, manufactured by the Middleby Auto Company, of Reading, Pa.

**Studebaker, Atlanta.**—The entire line of Studebaker cars will be represented in Atlanta by the Georgia Motor Car Company under the management of George

**W. Hanson**, who will act as distributing agent for the State of Georgia. Garage and salesrooms have been secured on North Pryor street.

**Brush, Philadelphia.**—The little Brush car effected a lodgment in the Quaker City last week, when the Oxford Automobile Company, 1615 Willington street, secured the local agency. Already arrangements for the placing of a number of sub-agencies are well under way.

**Michelin Tires, Pittsburgh.**—The Pittsburgh Auto & Repair Company has secured the exclusive agency for Western Pennsylvania, Eastern Ohio, and West Virginia for Michelin tires.

**Republic Tires, Kansas City, Mo.**—The Republic Rubber Company will be represented in Kansas City by E. P. Moriarty & Company.

#### PERSONAL TRADE MENTION.

**George B. Adams**, a pioneer of the auto trade world, has become connected with the Detroit-Cadillac Company of 303 West 59th Street, Manhattan, and will devote his attention to selling the new Cadillac "Thirty." Mr. Adams will be remembered as far back as 1899, when he occupied the position of president of the Adams-McMurtry Company, which at that time held the agency for Packard cars in New York. This agency was later changed to a branch and Mr. Adams became the manager. Since that time Mr. Adams has been connected with the Pope and American Locomotive companies. He was one of the organizers of the original trade association in New York, in which he held the position of vice-president.

**Ernest H. Brandt** has tendered his resignation as general manager of the Detroit-Cadillac Motor Car Company, of New York City, to accept the management of the Eastern distributing depot of Thomas B. Jeffery & Company, makers of Rambler automobiles. The headquarters will be in the Rambler Building, 38 West Sixty-second street, New York City, and Mr. Brandt will have charge of territory comprising Virginia, Maryland, Delaware, New Jersey, Pennsylvania, east of Altoona; eastern New York State, and western Connecticut.

**Charles B. Shanks**, sales manager of the Stearns Motor Company, was in Minneapolis during the past week, on his return from his Pacific coast trip, on which he started in September. Mr. Shanks is much enthused about the prospects in all the cities he visited, including Chicago, Denver, Portland, Spokane, and Seattle. In his opinion there will not be enough high quality cars made this year to satisfy the demand. Up to date the Stearns factory has taken more orders than ever before in a whole season.

**Eugene Grunewald**, superintendent and chief engineer of the Moline Automobile Company, of East Moline, Ill., was united in marriage on November 11 to Miss Pauline Haak, a young society woman of Davenport, Ia., the ceremony being performed at the home of the bride's father in that city. Mr. and Mrs. Grunewald left for an extended Eastern tour immediately after the ceremony, and will attend the Grand Prize race at Savannah, Ga., on Thanksgiving Day before returning to Moline.

**George Holloway**, who for the past 16 years has been general superintendent of the Elmore Automobile Company, has accepted a position with the Vim Motor Manufacturing Company, of Sandusky,

Ohio. The Vim company proposes to enter the automobile field with a two-cycle motor of much the same design as the marine engine made by it at present.

**Alfred Measure**, manager of the Morgan & Wright branch in Boston, and for the past eight years connected with that firm, has accepted a position as office manager for Alvan T. Fuller, Boston agent for the Packard and the Cadillac. Mr. Measure was in the bicycle business before going with the Morgan & Wright firm.

**David J. Post**, of the Veeder Manufacturing Company, Hartford, Conn., and a member of the American Motor Car Manufacturers' Association's show committee, has sailed for Europe to attend the London, Paris and Berlin automobile shows, gathering data and the latest ideas in European showdom.

**E. LeRoy Pelletier** has again been chosen to manage the show of the Detroit Association of Automobile Dealers. Mr. Pelletier looks after the advertising and publicity of the Everett-Metzger-Flanders Company and the Studebaker Automobile Company.

**William J. Slater**, advertising manager for the Firestone Tire & Rubber Company, has severed his connection with that concern to take up the general management of the Kalamazoo (Mich.) Telegraph, a newspaper in which he is financially interested.

**R. B. Jackson**, who was general manager of the E. R. Thomas Motor Company, of Buffalo, up to Oct. 1, 1908, has rented the old Northern plant at Detroit, where he is preparing to start in on the manufacture of automobile parts.

**J. S. Conwell**, formerly general manager for the Auto Vehicle Company, makers of the Tourist car, has joined the Maxwell-Briscoe Company selling forces as general manager in the Southern California territory.

**Louis J. Sackett**, well known to the automobile trade, is exploiting the merits of the Stearns cars for Wyckoff, Church & Partridge in the territory east of Buffalo and Pittsburg.

**H. J. Edwards**, chief engineer of the Dayton Motor Car Company, has sailed for Europe to attend the London and Paris automobile shows.

**Harry Sheldon**, representing the Continental Tire Company, is spending a few weeks on a visit to the Pacific coast territory.

**Dan J. Cohen**, formerly with R. M. Owen & Company, has been added to the sales department of the Oldsmobile Company.

**Russell Huff**, chief engineer of the Packard Motor Car Company, has sailed for Europe to attend the Paris show.

**R. H. White**, of Detroit, has joined the selling forces of the White Company.

#### GEORGE A. BURNHAM KILLED.

**DETROIT**, Nov. 14.—George A. Burnham, general factory manager for Morgan & Wright, was accidentally killed while duck hunting at the St. Calir flats near Pearl Beach, this afternoon. Mr. Burnham was out in a boat and while trying to put his gun back of him a cartridge exploded, the load entering the neck at the base of the skull. Mr. Burnham was 34 years of age and had been in the employ of Morgan & Wright since 1893, with the exception of 1 year during the Spanish-American war. He left a widow and three children.

#### HAYNES INCREASES CAPITAL.

**KOKOMO, IND.**, Nov. 16.—In order to carry on operations on a more extensive scale than heretofore, the Haynes Automobile Company, one of the oldest concerns in the country, increased its capitalization from \$300,000 to \$600,000 at a meeting of the stockholders held here last week, at the same effecting a complete reorganization. A large part of the increased capital stock has been subscribed by local investors, so that Kokomo stockholders will be largely in the majority. Home control of the company has been vested in the local interests for the coming five years by the terms of the reorganization. This step has been contemplated for some time, and would have been taken earlier in the Fall, had it not been for the unsettled business conditions. The directors chosen at the stockholders' meeting are as follows: Elwood Haynes, C. H. Haynes, Henry C. Davis, Stephen Tudor, A. L. Thalman, William Johnson and George W. Charles, of Kokomo, and W. M. Haynes and C. C. Cartwright, of Portland, Ind.

The directors held a meeting immediately after the completion of the reorganization and passed a resolution creating a board of trustees, composed of three members of the directorate, and empowered it to vote a majority of the stock as a unit for the next five years, in order to insure local control of the company's affairs. The trustees selected were H. C. Davis and Richard Ruddell, of Kokomo, and C. C. Cartwright, of Portland.

The Haynes plant had a very modest beginning, but its growth has been rapid and both its buildings and machine equipment entitle it to rank high at the present day. The entire Haynes force is now busily employed in getting out a series of 200 of the new Model X cars.

#### ELECTRIC VEHICLE REPORT.

**HARTFORD, CONN.**, Nov. 16.—Halsey M. Barrett and Henry W. Nuckles have filed their report as receivers of the Electric Vehicle Company of business during the month of October. According to the September report, the receivers had cash on hand amounting to \$208,188.45 and collections brought the figures up to \$304,804.53, including \$77,914.04 for royalties. The October report shows a balance on hand of \$175,834.28, November 1. Cash sales for the month amount to \$22,592.02, which also includes charges on account.

Listed in the receipts is an item of \$77,914.04 from Selden royalty, and in the disbursements is listed an item of \$76,580.41 to the Licensed Association. It will be noted that practically all the money received from the Selden royalty was turned over to the Licensed Association, the reason for which is that after the company had passed into the hands of the receivers a new royalty agreement was necessary, and this came about in due course with the consent of the courts. A definite maximum sum that the Electric Vehicle Company should receive in any one year was fixed and the company before the month of October received this sum, with the exception of about \$1,300, and the excess over \$1,300 was turned over to the Licensed Association. The balance on hand November 10 is smaller than that of October 1, but it must be borne in mind that a larger force is now employed and that more extensive operations are being carried on than heretofore. All things considered, the receivers are doing exceptionally well.